# COILS AND FILTERS

NEW! Updated 1992 Version

TOKO

TOKO AMERICA, INC.

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TOKO COILS & FILTER CATALOG
PART NO. 9139B
QTY 1
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MANF NO CF-1-COIL CAT
DESTINATION CX-0770
SALES ORDER NUMBER 2030924

TOKO
TOKO AMERICA, INC.

*TOKO America headquarters are located in the Chicago suburb of Mount Prospect, Illinois. In addition to this facility, there are regional offices throughout North America, staffed with applications engineering and sales personnel. This facility serves North American based multinational companies as well.*

# World class designer and manufacturer of coils and filters.

**TOKO Quality . . . Designed In, Built In, Verified & Delivered.**

TOKO is committed to providing the best in value, quality, reliability, performance and service.

**VALUE** When comparing price, consider the total cost of the part including quality, reliability, performance, on-time delivery, incoming inspection, reputation, manufacturing technology, and responsiveness. TOKO has earned NIV (No Incoming Verification), Quality Supplier, Supplier Alliance Vendor, as well as many other top supplier classifications at leading U.S. companies through demonstrated quality over the years.

**BREADTH OF LINE** Many TOKO stock items are others' specials. Modified TOKO stock items are others' customs. Lower cost and faster availability result in added value to you.

Because of our large number of related RF components, our wide assortment provides many of your typical circuit needs. Matched components literally made for each other assure precise impedance matching not achievable with any consistency using various manufacturers' components. Open or molded construction; ceramic, hybrids and integrated circuits; all are available from one source: TOKO.

**DIVERSIFIED SOURCE** TOKO manufactures in 16 plants in six countries, offering the safety of an uninterruptable supply. All TOKO plants deliver the same superior quality because all are highly automated and are overseen by TOKO's TOQC (Total Quality Control) center in Japan.

**MANUFACTURING TECHNOLOGY** TOKO designs and builds its own state-of-the-art automated fabrication and assembly equipment. Tuning/trimming is completely automatic. In fact, TOKO-developed numerical control LSI's are also used by some of the world's largest robot and machine builders for positioning controls.

**DELIVERY** This catalog is part of TOKO America's commitment to speed part selection, order placement and deliveries worldwide.

**AVAILABILITY** Centrally located master inventory with regional depots assures fast product availability. Local inventories are carried by TOKO authorized distributors.

**REPUTATION** You are assured of solid value because TOKO has earned its reputation for leadership in design, quality and manufacturing excellence. You can count on TOKO meeting the needs of today's demanding specifications and performance; components and assemblies that deliver unequaled selectivity, flat band pass characteristics, high stop band attenuation and high Q at lowest possible prices.

TOKO's extensive research and development program carries forward a never-ending dedication to smaller size, higher density, higher performance and overall miniaturization.

AJIN

# Communicating with TOKO America is easy.

**APPLICATION ENGINEERING**

Additional specifications, test data, and application engineering is available from any of the regional TOKO offices. Complete design service is available at TOKO America headquarters.

**SAMPLES**

For samples of stock items, please use the sample request card located in the back of this catalog or contact a TOKO authorized distributor.

For samples of modified and custom items, please use the request card included in this catalog, delineating the specifics required to design a modified or custom part, and return it to TOKO America.

**SPECIAL TESTING/LABELING**

Special testing, data reporting, labeling and bar coding is available at extra cost. Specifications should be included in the part's description and will be quoted with the part.

**QUOTATIONS**

Quotations for price and delivery of stock items may be obtained from any TOKO America office, local representative or authorized distributor. Please direct quotation requests for modified and custom items to TOKO America headquarters, along with a completed design outline request card located in the back of this catalog.

**PLACING ORDERS**

Orders can be placed with any TOKO regional office, local representative, or a TOKO authorized stocking distributor.

Multi-national companies based in North America should source requirements with TOKO America, regardless of destination, for best value, delivery and control.

In addition to specifying the complete TOKO part number, it is good practice to also specify the catalog page number and description. Include required delivery dates, shipping instructions and contact person(s)' name. Technical information concerning the application and design parameters is also welcomed.

Lead-times vary depending on the item and quantity. Large orders may be scheduled over time to suit your production schedule.

**RETURNS**

All returns must be accompanied with an authorization number obtained from the TOKO office order processing department that handled the original order. Please ship prepaid. Unauthorized returns and those without the RA number displayed will be refused at the dock.

**YOUR SUGGESTIONS AND COMMENTS**

Please tell us about products and services you require that are not included in this catalog. Chances are we can respond favorably. Please use the Suggestion Card located in the back of this catalog.

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**GENERAL SPECIFICATIONS**

| Parameter | Test Procedure | Permissable Change |
|---|---|---|
| Humidity | Expose to 40°C ±2°C and 90-95% RH for 96 hours, ±4 hours. Expose to room temperature 1 hour. | |
| High Temp. Storage | Expose to 85°C ±2°C for 2 hours. Expose to room temperature 1 hour. | Frequency within ±0.5% |
| Low Temp. Inductance within Storage | Expose to −25°C ±3°C for 2 hours.<br>Expose to room temperature 1 hour. | ±1.0% |
| Thermal Shock | Cycle five times to −25°C for 1 hour, 25°C for 10 minues, 85°C for 1 hour and 25°C for 10 minutes.<br>Expose to room temperature 1 hour. | Unloaded Q within ±20% |
| Vibration | Apply vibration of 1.5 amplitude for 2 hours in each of three axes. The frequency is cycled for one minute from 10Hz to 55Hz and back to 10Hz. | |
| Shock | Apply 100G shock for 0.01 second in each of three axes. | |
| Solder Heat | Install coil on PCB and dip in molten solder at 270°C ±5°C for 10 ±1 second. Expose to room temperature for 1 hour. | |
| Dielectric Strength | Apply 100VDC for one minute between case and pins, and primary and secondary windings. | No apparent defect |
| Insulation Resistance | Apply 100VDC for one minute between case and pins, and primary and secondary windings. | Greater than 100M Ohms |

Please note that in the interest of keeping our product designs current, specifications contained in this catalog are necessarily subject to change at any time without notice.

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# SURFACE MOUNT

## *SURFACE MOUNT DEVICES/ ADJUSTABLE & FIXED*

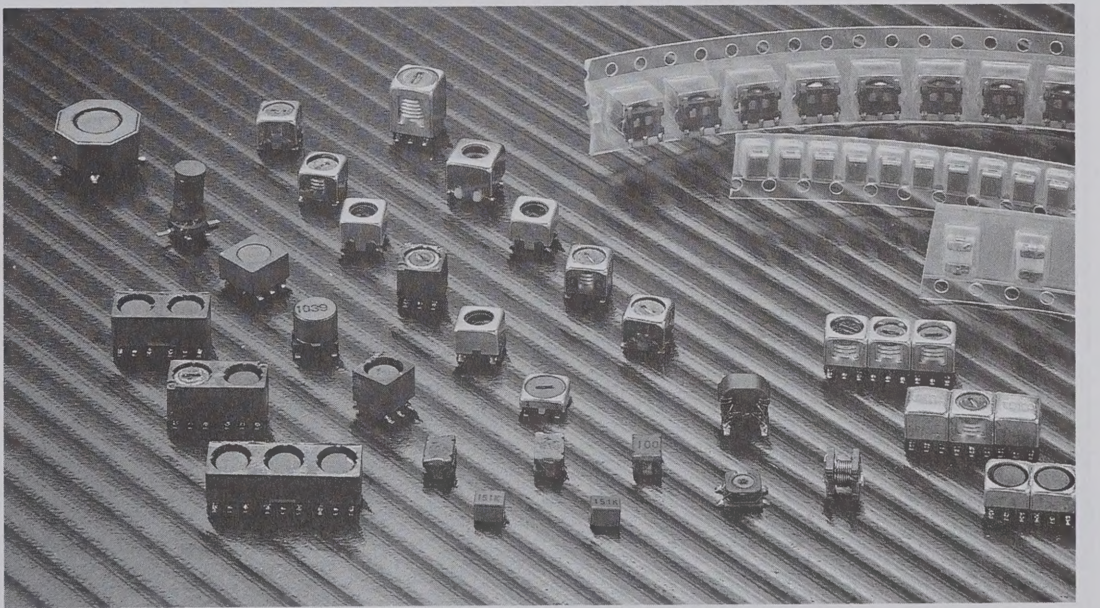
TOKO SMT engineering expertise backs every product in this section. Many items are offered with patented features that make them unique. Ultra-miniature size, wider frequency ranges, closer tolerances, and other superior characteristics make TOKO a leader in Surface Mount Devices. TOKO will design and manufacture surface mount components with the specific characteristics needed to meet your requirements.

TOKO Surface Mount Devices are manufactured utilizing the most progressive automatic winding technology and assembly equipment in the industry. TOKO engineers have designed production equipment so exacting and advanced that uniformity and reliability are assured.

From the very beginning of SMT's use, TOKO has consistently been developing and introducing the latest in SMT coils and filters. In fact, in most recent years, over 50% of all new products introduced by TOKO have been SMT. This wide offering of sub-miniature devices presents the design engineer with a selection of coils and filters in a variety of constructions: ceramic or ferrite core, fixed (open or molded), adjustable, shielded, LC filters, and ganged units of up to 3 devices for a host of application needs. This product breadth is unequaled by any other manufacturer.

Because of TOKO's enormous product breadth, our products are used in most industries around the globe by hundreds of the world's largest manufacturers. Packaging sizes are frequently within SMTA standards to give them universal appeal and assure compatibility with automated assembly equipment. You need not concern yourself with the problem of odd size packaging from other "short line vendors". TOKO IS THE STANDARD.

TOKO's rigid on-line quality control maintains tight tolerances on pad dimensions and terminations to eliminate the vexing problems of "tombstoning". Our unique presoldering compound also assures reliable bonding to your PCB.



# SURFACE MOUNTING

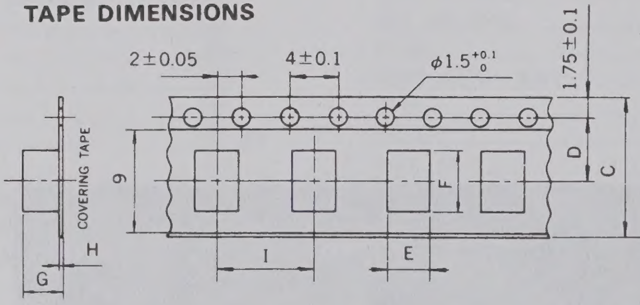
## *Surface Mount Devices/Adjustable & Fixed*

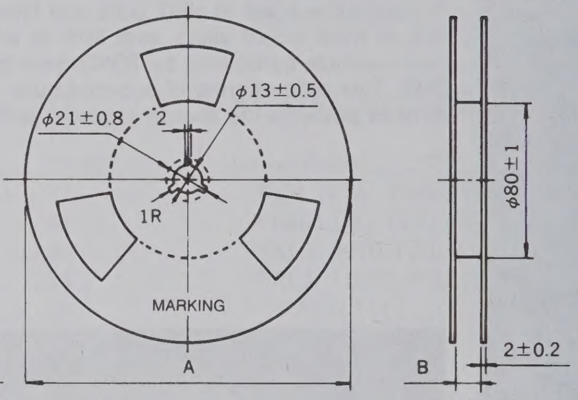
This ever expanding assortment of product and unsurpassed quality control, not only give you a component that functionally performs, but just as importantly, allows the use of a variety of placement and soldering equipment necessary for the FLEXIBLE MANUFACTURING PLANT required in today's competitive world.

Various packaging schemes are available. In addition to bulk, tape and reel and magazine, are offered for high volume insertion equipment. The following chart lists the packaging details for TOKO's SMD coils:

Unit: mm

**TAPE DIMENSIONS**





(1) There are at least 10 blank spaces (80mm each) at both ends of the tape which do not include the coils.
(2) The protective tape should not cover the holes nor be shifted to the sides. Further, the tape should not be removed during transportation.
(3) 500 or 1,000 coils are wound in on a reel.
(4) The deficiency per reel is within 0.5%.
(5) The coils are positioned with the bonding surface facing outward.
(6) Dimensional tolerances conform to the standards of Electronic Industries Association of Japan (EIAJ), RC-1009B, for Taping Dimensions (Chip Form) of Electronic Components.

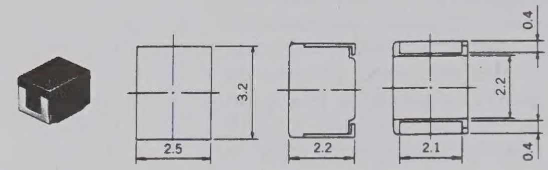
| Type | Reel size (mm) | | Tape size (mm) | | | | | | | Q'ty/ 1 Reel |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | I | |
| 43CS,43FS | 170 | 14.0±2.0 | 12.0±.3 | 5.5±.05 | 3.6±.1 | 5.1±.1 | 3.2±.1 | 0.3±.05 | 8.0±.1 | 500 |
| 32CS | 330 | 10±2.0 | 8±.4 | 3.5±.2 | 2.8±.2 | 3.6±.2 | 2.6±.2 | 0.4±.1 | 4.0±.1 | 5000 |
| 5CA | 300 | 14.0±2.0 | 12.0±.3 | 5.5±.05 | 6.9±.1 | 6.4±.1 | 4.6±.1 | 0.4±.05 | 8.0±.1 | 1000 |
| 5CCA | 300 | 16.4±2.0 | 16±.4 | 7.5±.2 | 6.2±.2 | 6.6±.2 | 6.2±.2 | 0.4±.1 | 12.0±.1 | 500 |
| 5CDL | 300 178 | 14.0±2.0 | 12.0±.3 | 5.5±.05 | 5.4±.1 | 5.9±.1 | 2.4±.1 | 0.4±.05 | 8.0±.1 | 2000 500 |
| 5CBL | 300 178 | 14.0±2.0 | 12.0±.3 | 5.5±.05 | 5.0±.1 | 6.5±.1 | 2.6±.1 | 0.4±.05 | 8.0±.1 | 2000 500 |
| 5CD | 300 178 | 14.0±2.0 | 12.0±.3 | 5.5±.05 | 5.5±.1 | 5.5±.1 | 5.0±.1 | 0.4±.05 | 8.0±.1 | 1000 400 |
| 5CCD | 300 | 16.4±2.0 | 16±.4 | 7.5±.2 | 6.2±.2 | 6.6±.2 | 5.7±.2 | 0.4±.1 | 12.0±.1 | 500 |
| 5CCL | 300 | 16.4±2.0 | 16±.4 | 7.5±.2 | 6.2±.2 | 6.6±.2 | 5.2±.2 | 0.4±.1 | 8.0±.1 | 1000 |
| 5CB | 300 178 | 14.0±2.0 | 12.0±.3 | 5.5±.05 | 5.5±.1 | 5.5±.1 | 5.0±.1 | 0.4±.05 | 8.0±.1 | 1000 400 |
| 5CBG | 300 | 14±2.0 | 12±.4 | 5.5±.2 | 5.5±.2 | 5.5±.2 | 5.0±.2 | 0.4±.1 | 8.0±.1 | 1000 |
| MC152 | 300 | 16.4±2.0 | 16±.4 | 7.5±.2 | 5.4±.2 | 7.4±.2 | 5.3±.2 | 0.4±.1 | 8.0±.1 | 1000 |
| 6CDA | 300 | 16.4±2.0 | 16±.4 | 7.5±.2 | 6.9±.2 | 7.6±.2 | 3±.2 | 0.4±.1 | 8.0±.1 | 1000 |
| 10RF | 300 | 24.4±2.0 | 24±.4 | 11.5±.2 | 10.4±.2 | 10.1±.2 | 5.8±.2 | 0.4±.1 | 16.0±.1 | 500 |
| 12RF | 300 | 24.4±2.0 | 24±.4 | 11.5±.2 | 12.1±.2 | 12.1±.2 | 6.8±.2 | 0.4±.1 | 16.0±.1 | 500 |
| B4F | 300 | 14±2.0 | 12±.4 | 5.5±.2 | 5.4±.2 | 4.4±.2 | 3.5±.2 | 0.4±.1 | 8.0±.1 | 2000 |
| B5F | 300 | 16.4±2.0 | 16±.3 | 7.5±.1 | 6.5±.1 | 6.4±.1 | 4.3±.2 | 0.4±.05 | 8.0±.1 | 500 |
| B5FL | 300 | 16.4±2.0 | 16±.4 | 7.5±.2 | 6.5±.2 | 6.4±.2 | 3.5±.2 | 0.4±.1 | 12.0±.1 | 1000 |
| 5F | 300 | 16.4±2.0 | 16.4±.3 | 7.5±.1 | 5.8±.2 | 6.4±.2 | 8.4±.1 | 0.4±.05 | 12.0±.1 | 200 500 |
| 4FUS | 300 | 14.0±2.0 | 12.0±.3 | 5.5±.05 | 5.2±.1 | 6.4±.1 | 5.3±.1 | 0.4±.05 | 8.0±.1 | 1000 |
| 4FS | 300 178 | 14.0±2.0 | 12.0±.3 | 5.5±.05 | 5.2±.1 | 6.4±.1 | 5.3±.1 | 0.4±.05 | 8.0±.1 | 1000 |
| 4FW/5CE | 300 | 16.4±2.0 | 16.0±.3 | 7.5±.1 | 6.4±.1 | 10.1±.1 | 5.3±.1 | 0.4±.05 | 8.0±.1 | 1000 |
| 4FT | 300 | 24.0±2.0 | 24.0±.3 | 11.5±.1 | 6.4±.1 | 14.9±.1 | 5.3±.1 | 0.4±.05 | 8.0±.1 | 1000 |
| 4FNS | 300 | 14.0±2.0 | 12.0±.3 | 5.5±.05 | 5.5±.1 | 6.4±.1 | 5.3±.1 | 0.4±.05 | 8.0±.1 | 1000 |
| 4FNW | 300 | 24.4±2.0 | 24.0±.3 | 11.5±.1 | 6.4±.1 | 11.1±.1 | 5.3±.1 | 0.4±.05 | 8.0±.1 | 1000 |
| 4FNT | 300 | 24.4±2.0 | 24.0±.3 | 11.5±.1 | 6.4±.1 | 16.7±.1 | 5.3±.1 | 0.4±.05 | 8.0±.1 | 1000 |
| 4FLS | 300 | 14.0±2.0 | 12.0±.3 | 5.5±.05 | 5.2±.1 | 6.4±.1 | 3.8±.1 | 0.4±.05 | 8.0±.1 | 1000 |
| 4FLW | 300 | 16.4±2.0 | 16.0±.3 | 7.5±.05 | 6.4±.1 | 10.1±.1 | 3.8±.1 | 0.4±.05 | 8.0±.1 | 1000 |
| 4FLT | 300 | 24.4±2.0 | 24.0±.3 | 11.5±.1 | 6.4±.1 | 14.9±.1 | 3.8±.1 | 0.4±.05 | 8.0±.1 | 1000 |
| 4FJS | 300 | 14±2.0 | 12±.4 | 5.5±.2 | 5.2±.2 | 6.4±.2 | 4.2±.2 | 0.4±.1 | 8.0±.1 | 1000 |
| 4FJW | 300 | 16.4±2.0 | 16±.4 | 7.5±.2 | 6.4±.2 | 10.1±.2 | 4.2±.2 | 0.4±.1 | 8.0±.1 | 1000 |
| 4FJT | 300 | 24.4±2.0 | 24±.4 | 11.5±.2 | 6.4±.2 | 14.75±.2 | 4.2±.2 | 0.4±.1 | 8.0±.1 | 1000 |

## TYPE 32CS

**Reflow or Dip Soldering**

***Inductance Range:*** 0.01μH-220μH

***Temperature Characteristic:*** L drift within ± 6.5%.
Temperature range between −25°C ~ 85°C



## *Quality Features:*

- High inductance up to 220μH, with standard tolerances of ± 20% for 10nH ~ 82nH, of ± 10% or ± 20%, for 1μH-10μH, and ± 5% or ± 10% for 10μH-220μH.
- Low temperature coefficient assures minimal drift of values.
- Molded of superior grade resin for mechanical strength, electrical characteristic stability, protection from leaching and flux contamination.
- Up to fifty percent smaller for comparable values of other manufacturers.
- Compact package. Conforms to SMTA standard size Code A, ideal for automatic assembly. Available on 8mm embossed tape reel or tray.
- Excellent heat resistance characteristics.
- Reflows at 235° to 245°C, 5 to 10 seconds, maximum.
- Withstands Freon and Chlorothane degreasing.
- Operating Temperature −25°C−+85°.

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

1. Add the following tolerance code to Part No. within ( ): J = ± 5%, K ± 10%, M ± 20%.

### *TYPE 32CS*

| TOKO Part[1] Number | Inductance[1] (μH) | Q (min.) | Test Frequency (MHz) | DC Resistance (Ω) max. | Rated DC Current (mA) max. | Self Resonant Frequency (MHz) min. |
|---|---|---|---|---|---|---|
| 380NB-10N(M) | .010 | 18 | 100 | 0.10 | 510 | 1000 |
| 380NB-12N(M) | .012 | 19 | 100 | 0.12 | 490 | 1000 |
| 380NB-15N(M) | .015 | 20 | 100 | 0.14 | 470 | 1000 |
| 380NB-18N(M) | .018 | 20 | 100 | 0.16 | 450 | 1000 |
| 380NB-22N(M) | .022 | 21 | 100 | 0.17 | 430 | 900 |
| 380NB-27N(M) | .027 | 22 | 100 | 0.18 | 410 | 800 |
| 380NB-33N(M) | .033 | 22 | 100 | 0.19 | 390 | 720 |
| 380NB-39N(M) | .039 | 23 | 100 | 0.22 | 380 | 700 |
| 380NB-47N(M) | .047 | 24 | 100 | 0.23 | 360 | 650 |
| 380NB-56N(M) | .056 | 25 | 100 | 0.25 | 340 | 600 |
| 380NB-68N(M) | .068 | 26 | 100 | 0.28 | 320 | 550 |
| 380NB-82N(M) | .082 | 27 | 100 | 0.32 | 300 | 520 |
| 380NB-R10(M) | .100 | 18 | 25.2 | 0.38 | 250 | 450 |
| 380NB-R12(M) | .120 | 18 | 25.2 | 0.42 | 240 | 300 |
| 380NB-R15(M) | .150 | 17 | 25.2 | 0.46 | 230 | 220 |
| 380NB-R18(M) | .180 | 16 | 25.2 | 0.50 | 220 | 190 |
| 380NB-R22(M) | .220 | 15 | 25.2 | 0.54 | 200 | 160 |
| 380NB-R27(M) | .270 | 15 | 25.2 | 0.60 | 190 | 130 |
| 380NB-R33(M) | .330 | 15 | 25.2 | 0.65 | 180 | 100 |
| 380NB-R39(M) | .390 | 14 | 25.2 | 0.70 | 170 | 95 |
| 380NB-R47(M) | .470 | 13 | 25.2 | 0.75 | 170 | 85 |
| 380NB-R56(M) | .560 | 12 | 25.2 | 0.84 | 160 | 75 |
| 380NB-R68(M) | .680 | 12 | 25.2 | 0.92 | 150 | 70 |
| 380NB-R82(M) | .820 | 12 | 25.2 | 1.01 | 140 | 65 |
| 380LB-1R0(K,M) | 1.0 | 30 | 7.96 | 0.42 | 235 | 150 |
| 380LB-1R2(K,M) | 1.2 | 30 | 7.96 | 0.46 | 225 | 110 |
| 380LB-1R5(K,M) | 1.5 | 30 | 7.96 | 0.51 | 200 | 75.0 |
| 380LB-1R8(K,M) | 1.8 | 30 | 7.96 | 0.56 | 190 | 57.5 |
| 380LB-2R2(K,M) | 2.2 | 30 | 7.96 | 0.63 | 180 | 45.0 |
| 380LB-2R7(K,M) | 2.7 | 30 | 7.96 | 0.71 | 178 | 37.0 |

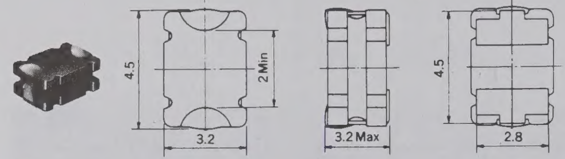
continued on next page

*continued from previous page*

### *TYPE 32CS*

| TOKO Part[1] Number | Inductance[1] (μH) | Q (min.) | Test Frequency (MHz) | DC Resistance (Ω) max. | Rated DC Current[2] (mA) max. | Self Resonant Frequency (MHz) min. |
|---|---|---|---|---|---|---|
| 380LB-3R3(K,M) | 3.3 | 30 | 7.96 | 0.78 | 175 | 32.5 |
| 380LB-3R9(K,M) | 3.9 | 30 | 7.96 | 0.86 | 170 | 29.5 |
| 380LB-4R7(K,M) | 4.7 | 30 | 7.96 | 0.94 | 160 | 27.0 |
| 380LB-5R6(K,M) | 5.6 | 30 | 7.96 | 1.43 | 127 | 24.0 |
| 380LB-6R8(K,M) | 6.8 | 30 | 7.96 | 1.63 | 125 | 20.5 |
| 380LB-8R2(K,M) | 8.2 | 30 | 7.96 | 1.76 | 120 | 19.0 |
| 380KB-100(J,K) | 10.0 | 30 | 2.52 | 1.76 | 118 | 18.5 |
| 380KB-120(J,K) | 12.0 | 30 | 2.52 | 2.02 | 93.0 | 17.0 |
| 380KB-150(J,K) | 15.0 | 30 | 2.52 | 2.28 | 85.0 | 15.5 |
| 380KB-180(J,K) | 18.0 | 30 | 2.52 | 2.54 | 80.0 | 14.5 |
| 380KB-220(J,K) | 22.0 | 30 | 2.52 | 4.03 | 73.3 | 11.5 |
| 380KB-270(J,K) | 27.0 | 30 | 2.52 | 4.55 | 68.3 | 11.5 |
| 380KB-330(J,K) | 33.0 | 30 | 2.52 | 5.20 | 61.7 | 10.5 |
| 380KB-390(J,K) | 39.0 | 30 | 2.52 | 5.59 | 56.7 | 9.50 |
| 380KB-470(J,K) | 47.0 | 30 | 2.52 | 8.06 | 51.7 | 9.00 |
| 380KB-560(J,K) | 56.0 | 30 | 2.52 | 9.10 | 43.3 | 8.25 |
| 380KB-680(J,K) | 68.0 | 30 | 2.52 | 13.4 | 42.5 | 8.00 |
| 380KB-820(J,K) | 82.0 | 30 | 2.52 | 14.3 | 37.5 | 6.00 |
| 380HB-101(J,K) | 100.0 | 18 | 0.796 | 14.3 | 37.3 | 5.75 |
| 380HB-121(J,K) | 120.0 | 18 | 0.796 | 16.3 | 35.0 | 5.00 |
| 380HB-151(J,K) | 150.0 | 18 | 0.796 | 19.5 | 32.0 | 4.40 |
| 380HB-181(J,K) | 180.0 | 18 | 0.796 | 20.8 | 31.0 | 4.25 |
| 380HB-221(J,K) | 220.0 | 18 | 0.796 | 23.4 | 30.0 | 3.90 |

**Dip Soldering**
***Inductance Range:*** 1μH-1mH
***Temperature Coefficient:*** −200 - 1000ppm/°C



## *Quality Features:*

- A wide range of inductance values are available for fast, easy circuit design for a wide range of applications.
- Ideal for hybrid and traditional circuits due to its high Q for size.
- Specially developed ferrite core material has high frequency response for wider frequency range.
- Ceramic core material is available for higher frequency ranges.
- Two levels of terminations employed. The winding is terminated to a palladium silver pad and then the pad is covered and welded with a phosphorous dioxide copper terminal clamp. The assembly is then presoldered. The terminal presolder has the lowest melting point to protect other parts and prevent leaching.
- Compact package. Conforms to SMTA standard size Code B, ideal for automatic assembly. Available on 12mm embossed tape reel.
- Solid phoshorous dioxide copper pads have eutecpic solder coating.
- Low temperature coefficient (−200 to +1000ppm/°C) assures minimal drift of L values.
- Operating range −10°C to +60°C continuous.
- Reflows at 235 to 245°C, 5 to 10 seconds, maximum.
- Windings are coated with silicon resin for dip soldering and high reliability.
- Withstands Freon and Chlorothane degreasing.

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

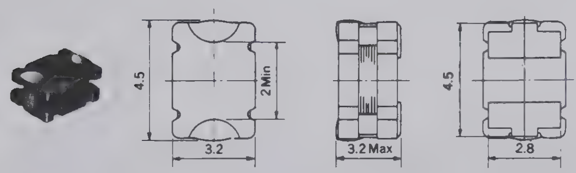
1. Add the following tolerance code to Part No. within ( ): J = ±5%, K = ± 10%, or M = ±20%.
2. The rated DC current is which the Temperature rise by excitation DC current (According to MIL-C-15305)
3. REPLACE * WITH C FOR DIP SOLDERING
CA FOR REFLOW SOLDERING

### *TYPE 43CS*

| TOKO Part[1] Number | Inductance[1] (μH) | Q (min.) | Test Frequency (MHz) | DC Resistance (Ω) max. | Rated DC Current[2] (mA) max. | Self Resonant Frequency (MHz) min. |
|---|---|---|---|---|---|---|
| 300LS-1R0 M(K) = *[3] | 1.0 | 50 | 7.96 | 0.42 | 250 | 128 |
| 300LS-1R2 M(K) = *[3] | 1.2 | 50 | 7.96 | 0.46 | 240 | 99 |
| 300LS-1R5 M(K) = *[3] | 1.5 | 50 | 7.96 | 0.49 | 230 | 87 |
| 300LS-1R8 M(K) = *[3] | 1.8 | 50 | 7.96 | 0.55 | 220 | 74 |
| 300LS-2R2 M(K) = *[3] | 2.2 | 50 | 7.96 | 0.59 | 200 | 66 |
| 300LS-2R7 M(K) = *[3] | 2.7 | 50 | 7.96 | 0.68 | 190 | 52 |
| 300LS-3R3 M(K) = *[3] | 3.3 | 50 | 7.96 | 0.75 | 180 | 43 |
| 300LS-3R9 M(K) = *[3] | 3.9 | 50 | 7.96 | 0.81 | 160 | 37 |
| 300LS-4R7 M(K) = *[3] | 4.7 | 50 | 7.96 | 0.89 | 160 | 33 |
| 300LS-5R6 M(K) = *[3] | 5.6 | 50 | 7.96 | 0.98 | 150 | 29 |
| 300LS-6R8 M(K) = *[3] | 6.8 | 50 | 7.96 | 1.10 | 150 | 24 |
| 300LS-8R2 M(K) = *[3] | 8.2 | 50 | 7.96 | 1.20 | 150 | 21 |
| 300LS-100 M(K) = *[3] | 10.0 | 50 | 7.96 | 1.29 | 145 | 18 |
| 300LS-120 K(J) = *[3] | 12.0 | 50 | 2.52 | 1.43 | 140 | 15 |
| 300LS-150 K(J) = *[3] | 15.0 | 50 | 2.52 | 1.56 | 130 | 14 |
| 300LS-180 K(J) = *[3] | 18.0 | 50 | 2.52 | 1.77 | 125 | 13 |
| 300LS-220 K(J) = *[3] | 22.0 | 50 | 2.52 | 1.99 | 115 | 11 |
| 300LS-270 K(J) = *[3] | 27.0 | 50 | 2.52 | 2.21 | 105 | 9 |
| 300LS-330 K(J) = *[3] | 33.0 | 50 | 2.52 | 2.38 | 100 | 9 |
| 300LS-390 K(J) = *[3] | 39.0 | 50 | 2.52 | 2.86 | 95 | 8 |
| 300LS-470 K(J) = *[3] | 47.0 | 50 | 2.52 | 3.19 | 85 | 8 |
| 300LS-560 K(J) = *[3] | 56.0 | 50 | 2.52 | 3.52 | 85 | 8 |
| 300LS-680 K(J) = *[3] | 68.0 | 50 | 2.52 | 3.92 | 75 | 7 |
| 300LS-820 K(J) = *[3] | 82.0 | 50 | 2.52 | 4.42 | 75 | 6 |
| 300LS-101 K(J) = *[3] | 100.0 | 50 | 2.52 | 4.97 | 70 | 5 |
| 300HS-121 K(J) = *[3] | 120.0 | 50 | .796 | 4.24 | 70 | 5 |
| 300HS-151 K(J) = *[3] | 150.0 | 50 | .796 | 4.83 | 65 | 4 |
| 300HS-181 K(J) = *[3] | 180.0 | 50 | .796 | 5.58 | 60 | 4 |
| 300HS-221 K(J) = *[3] | 220.0 | 50 | .796 | 6.13 | 60 | 4 |
| 300HS-271 K(J) = *[3] | 270.0 | 50 | .796 | 7.12 | 55 | 3 |
| 300HS-331 K(J) = *[3] | 330.0 | 50 | .796 | 8.10 | 50 | 3 |
| 300HS-391 K(J) = *[3] | 390.0 | 50 | .796 | 10.4 | 50 | 2.5 |
| 300HS-471 K(J) = *[3] | 470.0 | 50 | .796 | 11.4 | 45 | 2.5 |
| 300SS-561 K(J) = *[3] | 560.0 | 50 | .796 | 12.8 | 45 | 1.5 |
| 300SS-681 K(J) = *[3] | 680.0 | 50 | .796 | 14.6 | 40 | 1.5 |
| 300SS-821 K(J) = *[3] | 820.0 | 50 | .796 | 16.5 | 30 | 1.0 |
| 300SS-102 K(J) = *[3] | 1000.0 | 50 | .796 | 18.6 | 30 | 1.0 |

## TYPE 43FS

**For Reflow Soldering**
***Inductance Range:*** 0.1μH-1000μH
***Temperature Coefficient:*** −200 - 1000ppm/⁰C



### *Quality Features:*

- Ideal for hybrid and traditional circuits due to its precise Q for size.
- Specially developed ferrite core materials have high frequency response for wider frequency range.
- Ceramic core material is available for higher frequency ranges. Low thermal coefficient assures minimal drift of F and L values.
- Two levels of terminations are employed. The winding is terminated to a palladium silver pad and then the pad is covered and welded with a phosphorous dioxide copper terminal clamp. The assembly is then presoldered. The terminal presolder has the lowest melting point to protect other parts and prevent leaching.
- Compact package. Conforms to SMTA standard size Code B, for automatic assembly equipment. Available on 12mm embossed tape reel.
- Solid phosphorous dioxide copper pads have eutecpic solder coating.
- Operating range −10°C to +60°C continuous.
- Reflows at 235 to 245°C, 5 to 10 seconds, maximum.
- Withstands Freon and Chlorothane degreasing.

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

1. Add the following tolerance code to Part No. within ( ): J = ± 5%, K ± 10%, K ± 10⁄, or M = ± 20%.
2. The rated DC current is which the Temperature rise by excitation DC current (According to MIL-C-15305)

### *TYPE 43FS*

| TOKO Part[1] Number | Inductance (μH) | Q (min.) | Test Frequency (MHz) | DC Resistance (Ω) max. | Rated DC Current[2] (mA) max. | Self Resonant Frequency (MHz) min. |
|---|---|---|---|---|---|---|
| 300NS-R10M | 0.1 | 23 | 25.2 | 290 | 290 | 400 |
| 300NS-R12M | 0.12 | 23 | 25.2 | 320 | 250 | 350 |
| 300NS-R15M | 0.15 | 23 | 25.2 | 360 | 220 | 260 |
| 300NS-R18M | 0.18 | 23 | 25.2 | 390 | 210 | 215 |
| 300NS-R22M | 0.22 | 22 | 25.2 | 430 | 190 | 170 |
| 300NS-R27M | 0.27 | 22 | 25.2 | 490 | 170 | 140 |
| 300NS-R33M | 0.33 | 21 | 25.2 | 540 | 180 | 120 |
| 300NS-R39M | 0.39 | 21 | 25.2 | 590 | 155 | 120 |
| 300NS-R47M | 0.47 | 20 | 25.2 | 640 | 150 | 100 |
| 300NS-R56M | 0.56 | 19 | 25.2 | 700 | 145 | 90 |
| 300NS-R88M | 0.68 | 18 | 25.2 | 770 | 140 | 80 |
| 300NS-R82M | 0.82 | 17 | 25.2 | 860 | 135 | 70 |
| 300LS-1R0 (M,K) | 1.0 | 50 | 7.96 | 0.42 | 250 | 150 |
| 300LS-1R2 (M,K) | 1.2 | 50 | 7.96 | 0.46 | 240 | 120 |
| 300LS-1R5 (M,K) | 1.5 | 50 | 7.96 | 0.49 | 230 | 105 |
| 300LS-1R8 (M,K) | 1.8 | 50 | 7.96 | 0.55 | 220 | 90 |
| 300LS-2R2 (M,K) | 2.2 | 50 | 7.96 | 0.59 | 200 | 80 |
| 300LS-2R7 (M,K) | 2.7 | 50 | 7.96 | 0.68 | 190 | 63 |
| 300LS-3R3 (M,K) | 3.3 | 50 | 7.96 | 0.75 | 180 | 53 |
| 300LS-3R9 (M,K) | 3.9 | 50 | 7.96 | 0.81 | 160 | 45 |
| 300LS-4R7 (M,K) | 4.7 | 50 | 7.96 | 0.89 | 160 | 40 |
| 300LS-5R6 (M,K) | 5.6 | 50 | 7.96 | 0.98 | 150 | 35 |
| 300LS-6R8 (M,K) | 6.8 | 50 | 7.96 | 1.10 | 150 | 30 |
| 300LS-8R2 (M,K) | 8.2 | 50 | 7.96 | 1.20 | 150 | 26 |
| 300LS-100 (M,K) | 10.0 | 50 | 7.96 | 1.29 | 145 | 22 |
| 300LS-120 K(J) | 12.0 | 50 | 25.2 | 1.43 | 140 | 19 |
| 300LS-150 K(J) | 15.0 | 50 | 25.2 | 1.56 | 130 | 17 |
| 300LS-180 K(J) | 18.0 | 50 | 25.2 | 1.77 | 125 | 16 |
| 300LS-220 K(J) | 22.0 | 50 | 25.2 | 1.99 | 115 | 14 |
| 300LS-270 K(J) | 27.0 | 50 | 25.2 | 2.21 | 105 | 12 |
| 300LS-330 K(J) | 33.0 | 50 | 25.2 | 2.38 | 100 | 12 |
| 300LS-390 K(J) | 39.0 | 50 | 25.2 | 2.86 | 95 | 10 |
| 300LS-470 K(J) | 47.0 | 50 | 25.2 | 3.19 | 85 | 10 |
| 300LS-560 K(J) | 56.0 | 50 | 25.2 | 3.52 | 85 | 9.6 |
| 300LS-680 K(J) | 68.0 | 50 | 25.2 | 3.92 | 75 | 8.7 |
| 300LS-820 K(J) | 82.0 | 50 | 25.2 | 4.42 | 75 | 7.7 |

*continued on next page*

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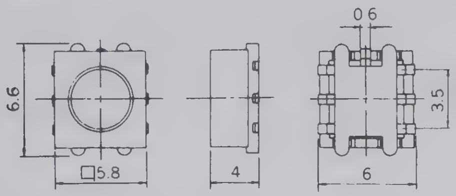
1. Add the following tolerance code to Part No. within ( ): J = ± 5%, K = ± 10%, or M = ± 20%.
2. The rated DC current is which the Temperature rise by excitation DC current ( According to MIL-C-15305)

## *TYPE 43FS*

| TOKO Part[1] Number | Inductance[1] ($\mu$H) | Q (min.) | Test Frequency (MHz) | DC Resistance ($\Omega$) max. | Rated DC Current[2] (mA) max. | Self Resonant Frequency (MHz) min. |
|---|---|---|---|---|---|---|
| 300LS-101 K(J) | 100.0 | 50 | 2.52 | 4.97 | 70 | 6.9 |
| 300HS-121 K(J) | 120.0 | 50 | .796 | 4.24 | 70 | 6.5 |
| 300HS-151 K(J) | 150.0 | 50 | .796 | 4.83 | 65 | 5.8 |
| 300HS-181 K(J) | 180.0 | 50 | .796 | 5.58 | 60 | 5.3 |
| 300HS-221 K(J) | 220.0 | 50 | .796 | 6.13 | 60 | 4.8 |
| 300HS-271 K(J) | 270.0 | 50 | .796 | 7.12 | 55 | 4.5 |
| 300HS-331 K(J) | 330.0 | 50 | .796 | 8.10 | 50 | 4.0 |
| 300HS-391 K(J) | 390.0 | 50 | .796 | 10.40 | 50 | 3.4 |
| 300HS-471 K(J) | 470.0 | 50 | .796 | 11.40 | 45 | 3.1 |
| 300SS-561 K(J) | 560.0 | 50 | .796 | 12.80 | 45 | 2.02 |
| 300SS-681 K(J) | 680.0 | 50 | .796 | 14.60 | 40 | 1.93 |
| 300SS-821 K(J) | 820.0 | 50 | .796 | 16.50 | 40 | 1.78 |
| 300SS-102 K(J) | 1000.0 | 50 | .796 | 18.60 | 40 | 1.62 |

## TYPE 5CA

*For Reflow Soldering*
*Frequency Range:* 10-500kHz
*Inductance Range:* 0.1-5mH



### Quality Features:

- Package design is ideal for automatic assembly. Available on 12mm embossed tape reel.
- Operating Temperature −10°C to +60°C.
- Reflows at 235 to 245°C, 5 to 10 seconds, maximum.
- Type 5CA available with up to 7 terminals to provide secondary winding or taps or function as a step-up transformer.

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard coils, which are readily available, TOKO will design and manufacture modified and custom coils with specific characteristics to meet your requirements. If you do not find the coil for your application in this catalog, please contact our sales office or representative office.

### TYPE 5CA

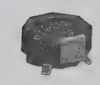
| TOKO Part Number | Inductance | Q (min.) | Test Frequency (kHz) |
|---|---|---|---|
| 395AN-0078IB | 100μH | 40 | 796 |
| 395AN-0079IB | 120μH | 40 | 796 |
| 395AN-0080IB | 150μH | 40 | 796 |
| 395AN-0081IB | 180μH | 40 | 796 |
| 395AN-0082IB | 220μH | 40 | 796 |
| 395AN-0083IB | 270μH | 40 | 796 |
| 395AN-0084IB | 330μH | 40 | 796 |
| 395AN-0085IB | 390μH | 40 | 796 |
| 395AN-0086IB | 470μH | 40 | 796 |
| 395AN-0087IB | 560μH | 40 | 796 |
| 395AN-0088IB | 680μH | 40 | 796 |
| 395AN-0089IB | 820μH | 40 | 796 |
| 395AN-0090IB | 1.0mH | 70 | 252 |
| 395AN-0091IB | 1.2mH | 70 | 252 |
| 395AN-0092IB | 1.5mH | 70 | 252 |
| 395AN-0093IB | 1.8mH | 70 | 252 |
| 395AN-0094IB | 2.2mH | 70 | 252 |
| 395AN-0095IB | 2.7mH | 70 | 252 |
| 395AN-0096IB | 3.3mH | 70 | 252 |
| 395AN-0097IB | 3.9mH | 70 | 252 |
| 395AN-0098IB | 4.7mH | 70 | 252 |
| 395AN-0099IB | 5.6mH | 70 | 252 |
| 395AN-0100IB | 6.8mH | 70 | 252 |

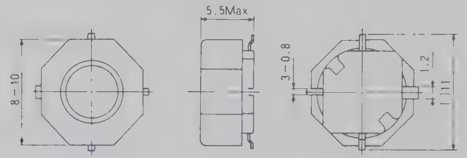
# TYPE 10RF 12RF Fixed Inductors — Surface Mounting Type

**TYPE 10RF**
**TYPE 12RF**

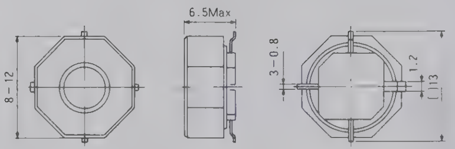
*Frequency Range:* 10-5MHz
*Inductance Range:* 10RF 1-200μH
12RF 10-560μH
*Temperature Coefficient:* 10RF 1000pp/°C
12RF 700ppm/°C

**10RF**





**12RF**



## *Quality Features:*

- High current transformer, ideal for use as a choke coil for DC-DC Converter.
- Available with secondary winding.
- Entire choke is magnetically shielded.
- Low profile package is ideal for height restrictive designs.
- Low DC resistance.
- SMD package ideal for Automated Assembly.
- Available on 24mm embosed tape reel.

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

1) The rated DC current is that which the inductance value decrease 10% by the excitation DC current, measured at 1kHz by universal bridge or equivalent.
2) Rated DC current is for reference only.

### *TYPE 10RF*

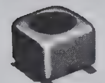
| TOKO Part Number | Inductance (μH) | Qu | Measuring Freq. Qu & Inductance | DC Resistance (ohm) | Rated DC[1), 2)] Current (mA) |
|---|---|---|---|---|---|
| 495A-1001 | 10±15% | 20 min. | 2.52 MHz | 0.077 max. | 1200 max. |
| 495A-1002 | 12±15% | 20 min. | 2.52 MHz | 0.085 max. | 1070 max. |
| 495A-1003 | 15±15% | 20 min. | 2.52 MHz | 0.094 max. | 1000 max. |
| 495A-1004 | 18±15% | 20 min. | 2.52 MHz | 0.110 max. | 930 max. |
| 495A-1005 | 22±15% | 20 min. | 2.52 MHz | 0.120 max. | 800 max. |
| 495A-1006 | 27±15% | 20 min. | 2.52 MHz | 0.130 max. | 760 max. |
| 495A-1007 | 33±15% | 20 min. | 2.52 MHz | 0.150 max. | 650 max. |
| 495A-1008 | 39±15% | 20 min. | 2.52 MHz | 0.160 max. | 620 max. |
| 495A-1009 | 47±15% | 20 min. | 2.52 MHz | 0.180 max. | 570 max. |
| 495A-1010 | 56±15% | 20 min. | 2.52 MHz | 0.200 max. | 520 max. |
| 495A-1011 | 68±15% | 20 min. | 2.52 MHz | 0.230 max. | 470 max. |
| 495A-1012 | 82±15% | 20 min. | 2.52 MHz | 0.250 max. | 430 max. |
| 495A-1013 | 100±15% | 20 min. | 796 kHz | 0.300 max. | 360 max. |
| 495A-1014 | 120±15% | 20 min. | 796 kHz | 0.340 max. | 340 max. |
| 495A-1015 | 150±15% | 20 min. | 796 kHz | 0.380 max. | 308 max. |
| 495A-1016 | 180±15% | 20 min. | 796 kHz | 0.450 max. | 279 max. |
| 495A-1017 | 220±15% | 20 min. | 796 kHz | 0.520 max. | 240 max. |

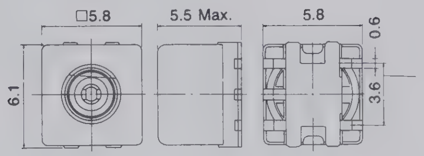
### *TYPE 12RF*

| TOKO Part Number | Inductance (μH) | Qu | Measuring Freq. Qu & Inductance | DC Resistance (ohm) | Rated DC Current (mA) |
|---|---|---|---|---|---|
| 457A-1001 | 10±15% | 30 min. | 2.52 MHz | 0.11 max. | 2200 max. |
| 457A-1002 | 12±15% | 30 min. | 2.52 MHz | 0.12 max. | 1860 max. |
| 457A-1003 | 15±15% | 30 min. | 2.52 MHz | 0.13 max. | 1740 max. |
| 457A-1004 | 18±15% | 30 min. | 2.52 MHz | 0.14 max. | 1598 max. |
| 457A-1005 | 22±15% | 30 min. | 2.52 MHz | 0.16 max. | 1479 max. |
| 457A-1006 | 27±15% | 30 min. | 2.52 MHz | 0.18 max. | 1357 max. |
| 457A-1007 | 33±15% | 30 min. | 2.52 MHz | 0.19 max. | 1259 max. |
| 457A-1008 | 39±15% | 25 min. | 2.52 MHz | 0.23 max. | 1089 max. |
| 457A-1009 | 47±15% | 25 min. | 2.52 MHz | 0.24 max. | 1020 max. |
| 457A-1010 | 56±15% | 25 min. | 2.52 MHz | 0.26 max. | 940 max. |
| 457A-1011 | 68±15% | 25 min. | 2.52 MHz | 0.28 max. | 880 max. |
| 457A-1012 | 82±15% | 25 min. | 2.52 MHz | 0.30 max. | 830 max. |
| 457A-1013 | 100±15% | 30 min. | 796 kHz | 0.36 max. | 680 max. |
| 457A-1014 | 120±15% | 30 min. | 796 kHz | 0.40 max. | 640 max. |
| 457A-1015 | 150±15% | 30 min. | 796 kHz | 0.45 max. | 580 max. |
| 457A-1016 | 180±15% | 30 min. | 796 kHz | 0.50 max. | 500 max. |
| 457A-1017 | 220±15% | 30 min. | 796 kHz | 0.54 max. | 480 max. |
| 457A-1018 | 270±15% | 30 min. | 796 kHz | 0.62 max. | 420 max. |
| 457A-1019 | 330±15% | 30 min. | 796 kHz | 0.67 max. | 397 max. |
| 457A-1020 | 390±15% | 30 min. | 796 kHz | 0.75 max. | 360 max. |
| 457A-1021 | 470±15% | 30 min. | 796 kHz | 0.85 max. | 310 max. |
| 457A-1022 | 560±15% | 30 min. | 796 kHz | 1.00 max. | 280 max. |

## TYPE 5CE

**For Reflow Soldering**
***Frequency Range:*** 30-150MHz
***Inductance Range:*** 0.068-2.2μH





### *Quality Features:*

- Ideal for high frequency microcircuit applications.
- Low profile, only 5.5mm
- High Q (typically 80) gives exceptional performance for this size package.
- TOKO's original concept features two horizontal slots on form to reduce stray capacitance, improve stability and attain higher frequency.
- Four vertical slots on form bring windings to terminals, producing a winding that precisely duplicates center frequency specifications.
- Coil form is specially designed with a high temperature material, highly resistant to damage and distortion during soldering.
- TOKO features unique manufacturing technique to create a smooth and consistent torque level between tuning core and coil form. Reduces core damage during alignment and firmly holds final setting.
- Plated brass case assures good electrostatic shielding.
- Package design ideal for automatic assembly. Available on 12mm embossed tape reel.
- Operating Temperature −10° to 60°C.
- Reflows at 235 to 245°C, 5 to 10 seconds, maximum.
- Available with up to four terminals to provide secondary winding or tap.

## STANDARD COILS SELECTION GUIDE

The Part Numbers shown in the table below are standard coils, which are readily available. TOKO will design and manufacture modified and custom coils to meet your requirements. If you do not find the coil for your application, please contact our sales office or representative office.

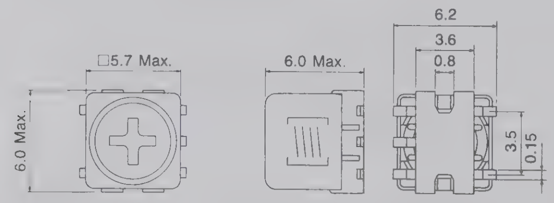
(1) DC Resistance and Self Resonant Frequency are for reference only.

### *TYPE 5CE*

| TOKO Part Number | Inductance (nH) | Q (Typ.) | Test Frequency of Q (MHz) | DC Resistance[1] (Ω) max. | Self Resonant Frequency[1] (MHz) min. |
|---|---|---|---|---|---|
| 432AN-1050Z | 68±4% | 62 | 100 | 0.15 | 580 |
| 432AN-1051Z | 82±4% | 57 | 100 | 0.29 | 580 |
| 432AN-1052Z | 100±4% | 70 | 100 | 0.18 | 580 |
| 432AN-1053Z | 120±4% | 72 | 100 | 0.20 | 580 |
| 432AN-1054Z | 150±5% | 66 | 100 | 0.29 | 487 |
| 432AN-1055Z | 180±5% | 80 | 100 | 0.22 | 443 |
| 432AN-1056Z | 220±5% | 75 | 100 | 0.36 | 354 |
| 432AN-1057Z | 270±5% | 70 | 80 | 0.26 | 270 |
| 432AN-1058Z | 330±5% | 60 | 80 | 0.55 | 273 |
| 432AN-1059Z | 390±5% | 66 | 80 | 0.46 | 230 |
| 432AN-1060Z | 470±5% | 58 | 60 | 0.48 | 207 |
| 432AN-1061Z | 560±5% | 66 | 60 | 0.52 | 270 |
| 432AN-1062Z | 680±5% | 50 | 30 | 0.67 | 170 |
| 432AN-1063Z | 820±5% | 50 | 30 | 0.73 | 155 |
| 432AN-1064Z | 1000±5% | 48 | 30 | 1.04 | 136 |
| 432AN-1065Z | 1200±5% | 48 | 30 | 1.12 | 113 |
| 432AN-1066Z | 1500±5% | 48 | 30 | 1.26 | 110 |
| 432AN-1067Z | 1800±5% | 48 | 30 | 1.36 | 105 |
| 432AN-1068Z | 2200±5% | 47 | 30 | 2.00 | 100 |

## TYPE 5CCA

**For Reflow Soldering**
***Frequency Range:*** 0.1-0.5MHz
***Inductance Range:*** 7mH max.
***Temperature Coefficient:*** 350±150ppm/°C (−40~0°C),
200±150ppm/°C (0~85°C)



### *Quality Features:*

- Ideal for RF and antenna coils in portable radio and car radio.
- Versatile! Wide inductance range makes it suitable for a wide variety of applications.
- Fixed drum and adjustable cup core ferrites provide precise tuning and protection against EMI.
- Low profile, 6.0mm high.
- TOKO's exclusive threaded metallic shielding provides precise tolerances of settings and protection from electrostatic interference.
- Large inductance provides high performance for size.
- Package design is ideal for automatic assembly. Available on 12mm embossed tape reel.
- Operating Temperature −10°C to +60°C.
- Reflows at 235 to 245°C, 5 to 10 seconds, maximum.
- Available with up to 5 terminals for transformer winding or taps.

## STANDARD COILS SELECTION GUIDE

The Part Numbers shown in the table below are standard coils, which are readily available. TOKO will design and manufacture modified and custom coils to meet your requirements. If you do not find the coil for your application , please contact our sales office or representative office.

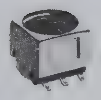
### *TYPE 5CCA*

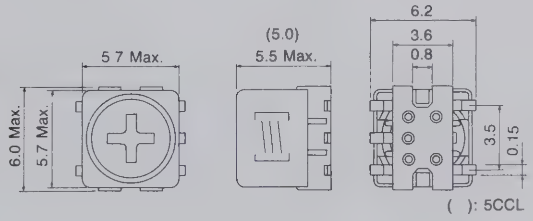
| TOKO Part Number | Inductance (μH) | Q (min.) | Test Frequency of L (kHz) | Inductance Adjustable Range (%) | Note |
|---|---|---|---|---|---|
| 615LN-9331Z | 330 | *40 | 796 | ±5 | |
| 615LN-9361Z | 360 | *40 | 796 | ±5 | |
| 615LN-9391Z | 390 | *40 | 796 | ±5 | |
| 615LN-9431Z | 430 | *40 | 796 | ±5 | |
| 615LN-9471Z | 470 | *40 | 796 | ±5 | |
| 615LN-9511Z | 510 | *40 | 796 | ±5 | |
| 615LN-9561Z | 560 | *40 | 796 | ±5 | |
| 615LN-9621Z | 620 | *40 | 796 | ±5 | |
| 615LN-9681Z | 680 | *40 | 796 | ±5 | |
| 615LN-9751Z | 750 | *40 | 796 | ±5 | |
| 615LN-9821Z | 820 | *40 | 796 | ±5 | |
| 615LN-9911Z | 910 | *40 | 796 | ±5 | |
| 615LN-9102Z | 1000 | 35 | 252 | ±5 | |
| 615LN-9112Z | 1100 | 35 | 252 | ±5 | |
| 615LN-9122Z | 1200 | 35 | 252 | ±5 | |
| 615LN-9132Z | 1300 | 35 | 252 | ±5 | |
| 615LN-9152Z | 1500 | 35 | 252 | ±5 | |
| 615LN-9162Z | 1600 | 35 | 252 | ±5 | |
| 615LN-9182Z | 1800 | 35 | 252 | ±5 | |
| 615LN-9202Z | 2000 | 35 | 252 | ±5 | |
| 615LN-9222Z | 2200 | 35 | 252 | ±5 | |
| 615LN-9242Z | 2400 | 35 | 252 | ±5 | |
| 615LN-9272Z | 2700 | 35 | 252 | ±5 | |
| 615LN-9302Z | 3000 | 35 | 252 | ±5 | |
| 615LN-9332Z | 3300 | 35 | 252 | ±5 | |
| 615LN-9362Z | 3600 | 35 | 252 | ±5 | |
| 615LN-9392Z | 3900 | 30 | 252 | ±5 | |
| 615LN-9432Z | 4300 | 30 | 252 | ±5 | |
| 615LN-9472Z | 4700 | 30 | 252 | ±5 | |
| 615LN-9512Z | 5100 | 30 | 252 | ±5 | |
| 615LN-9562Z | 5600 | 30 | 252 | ±5 | |
| 615LN-9622Z | 6200 | 30 | 252 | ±5 | |
| 615LN-9682Z | 6800 | 30 | 252 | ±5 | |

*Q measured at 450 kHz

## TYPE 5CCD (5CCL)

**For Reflow Soldering**
***Frequency Range:*** 0.1-2MHz
0.1-15MHz (High Frequency)
***Inductance Range:*** 1-1400μH (1-700μH)
1-330μH (1-150μH) (High Frequency)
***Temperature Coefficient:*** TC (L) 80±120ppm/°C (70±120ppm/°C)
140±120ppm/°C (120±120ppm/°C) (High Frequency)
TC (F) −40±120ppm/°C (−30±120ppm/°C)
−80±120ppm/°C (−60±120ppm/°C) (High Frequency)





- Fixed drum and adjustable cup core ferrites provide precise tuning and protection against EMI.
- Low profile, 5.5mm high.
- TOKO's exclusive threaded metallic shielding provides precise tolerances of settings and protection from electrostatic interference.
- High Q, typically 50, provides high performance for size.
- TOKO features a unique manufacturing technique to create a smooth and consistent torque level between tuning core and coil form. Reduces core damage during alignment and firmly holds final setting.
- Package design is ideal for automatic assembly. Available on 12mm embossed tape reel.
- Operating Temperature −10°C to +60°C.
- Reflows at 235 to 245°C, 5 to 10 seconds, maximum.

## *Quality Features:*

- Ideal for RF and oscillator coils in portable equipment and hybrid microcircuits.
- Versatile! Wide inductance range makes it suitable for a wide variety of applications.
- Low temperature coefficient core insures minimal frequency drift.
- Available with two internal capacitors, (4 to 1000pF) and up to five terminals for transformer windings or taps.

## STANDARD COILS SELECTION GUIDE

The Part Numbers shown in the table below are standard coils, which are readily available. TOKO will design and manufacture modified and custom coils to meet your requirements. If you do not find the coil for your application, please contact our sales office or representative office.

### *TYPE 5CCD*

| TOKO Part Number | Inductance (μH) | Q (min.) | Test Frequency of L (MHz) | Inductance Adjustable Range (%) | Note |
|---|---|---|---|---|---|
| 614BN-9018Z | 1.8 | 45 | 7.96 | ±3 | High Frequency |
| 614BN-9020IB | 2.0 | 45 | 7.96 | ±3 | High Frequency |
| 614BN-9022Z | 2.2 | 45 | 7.96 | ±3 | High Frequency |
| 614BN-9024IB | 2.4 | 50 | 7.96 | ±3 | High Frequency |
| 614BN-9027IB | 2.7 | 50 | 7.96 | ±3 | High Frequency |
| 614BN-9030Z | 3.0 | 50 | 7.96 | ±3 | High Frequency |
| 614BN-9033Z | 3.3 | 55 | 7.96 | ±3 | High Frequency |
| 614BN-9036IB | 3.6 | 55 | 7.96 | ±4 | High Frequency |
| 614BN-9039Z | 3.9 | 55 | 7.96 | ±4 | High Frequency |
| 614BN-9043Z | 4.3 | 55 | 7.96 | ±4 | High Frequency |
| 614BN-9047Z | 4.7 | 55 | 7.96 | ±4 | High Frequency |
| 614BN-9051IB | 5.1 | 55 | 7.96 | ±4 | High Frequency |
| 614BN-9056Z | 5.6 | 65 | 7.96 | ±4 | High Frequency |
| 614BN-9062Z | 6.2 | 65 | 7.96 | ±4 | High Frequency |
| 614BN-9068Z | 6.8 | 65 | 7.96 | ±4 | High Frequency |
| 614BN-9075Z | 7.5 | 65 | 7.96 | ±4 | High Frequency |
| 614BN-9082Z | 8.2 | 65 | 7.96 | ±4 | High Frequency |
| 614BN-9091Z | 9.1 | 65 | 7.96 | ±4 | High Frequency |
| 614BN-9100Z | 10 | 45 | 2.52 | ±5 | High Frequency |
| 614BN-9110Z | 11 | 45 | 2.52 | ±5 | High Frequency |
| 614BN-9120Z | 12 | 45 | 2.52 | ±5 | High Frequency |
| 614BN-9130Z | 13 | 45 | 2.52 | ±5 | High Frequency |
| 614BN-9150Z | 15 | 45 | 2.52 | ±5 | High Frequency |
| 614BN-9160Z | 16 | 45 | 2.52 | ±5 | High Frequency |
| 614BN-9180Z | 18 | 45 | 2.52 | ±5 | High Frequency |

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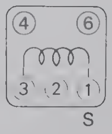


*CONNECTIONS*
*Z*

### *TYPE 5CCD*

| TOKO Part Number | Inductance (μH) | Q (min.) | Test Frequency of L (MHz) | Inductance Adjustable Range (%) | Note |
|---|---|---|---|---|---|
| 614BN-9200Z | 20 | 45 | 2.52 | ± 5 | High Frequency |
| 614BN-9220Z | 22 | 45 | 2.52 | ± 5 | High Frequency |
| 614BN-9240Z | 24 | 45 | 2.52 | ± 5 | High Frequency |
| 614BN-9270Z | 27 | 45 | 2.52 | ± 5 | High Frequency |
| 614BN-9300Z | 30 | 45 | 2.52 | ± 5 | High Frequency |
| 614BN-9330Z | 33 | 45 | 2.52 | ± 5 | High Frequency |
| 614BN-9360Z | 36 | 45 | 2.52 | ± 5 | High Frequency |
| 614BN-9390Z | 39 | 45 | 2.52 | ± 5 | High Frequency |
| 614BN-9430Z | 43 | 45 | 2.52 | ± 5 | High Frequency |
| 614BN-9470Z | 47 | 45 | 2.52 | ± 5 | High Frequency |
| 614BN-9510Z | 51 | 45 | 2.52 | ± 5 | High Frequency |
| 614BN-9560Z | 56 | 45 | 2.52 | ± 5 | High Frequency |
| 614BN-9620Z | 62 | 45 | 2.52 | ± 5 | High Frequency |
| 614AN-9680Z | 68 | *30 | 2.52 | ± 5 | |
| 614AN-9750Z | 75 | *30 | 2.52 | ± 5 | |
| 614AN-9820Z | 82 | *30 | 2.52 | ± 5 | |
| 614AN-9910Z | 91 | *30 | 2.52 | ± 5 | |
| 614AN-9101Z | 100 | 45 | 0.796 | ± 5 | |
| 614AN-9111Z | 110 | 45 | 0.796 | ± 5 | |
| 614AN-9121Z | 120 | 45 | 0.796 | ± 5 | |
| 614AN-9131Z | 130 | 45 | 0.796 | ± 5 | |
| 614AN-9151Z | 150 | 45 | 0.796 | ± 5 | |
| 614AN-9161Z | 160 | 45 | 0.796 | ± 5 | |
| 614AN-9181Z | 180 | 45 | 0.796 | ± 5 | |
| 614AN-9201Z | 200 | 45 | 0.796 | ± 5 | |
| 614AN-9221Z | 220 | 45 | 0.796 | ± 5 | |
| 614AN-9241Z | 240 | 45 | 0.796 | ± 5 | |
| 614AN-9271Z | 270 | 45 | 0.796 | ± 5 | |
| 614AN-9301Z | 300 | 45 | 0.796 | ± 5 | |
| 614AN-9331Z | 330 | 45 | 0.796 | ± 5 | |
| 614AN-9361Z | 360 | 45 | 0.796 | ± 5 | |
| 614AN-9391Z | 390 | 45 | 0.796 | ± 5 | |
| 614AN-9431Z | 430 | 45 | 0.796 | ± 5 | |
| 614AN-9471Z | 470 | 45 | 0.796 | ± 5 | |
| 614AN-9511Z | 510 | 45 | 0.796 | ± 5 | |
| 614AN-9561Z | 560 | 45 | 0.796 | ± 5 | |
| 614AN-9621Z | 620 | 45 | 0.796 | ± 5 | |
| 614AN-9681Z | 680 | 45 | 0.796 | ± 5 | |
| 614AN-9751Z | 750 | 45 | 0.796 | ± 5 | |
| 614AN-9821Z | 820 | 45 | 0.796 | ± 5 | |
| 614AN-9911Z | 910 | 45 | 0.796 | ± 5 | |
| 614AN-9102Z | 1000 | 30 | 0.252 | ± 5 | |
| 614AN-9112Z | 1100 | 30 | 0.252 | ± 5 | |
| 614AN-9122Z | 1200 | 30 | 0.252 | ± 5 | |
| 614AN-9132Z | 1300 | 30 | 0.252 | ± 5 | |

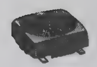
*Q Measured at 455kHz.

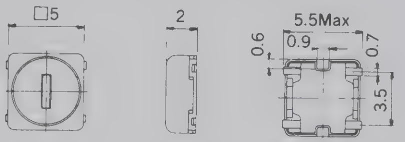
## TYPE 5CCL

| TOKO Part Number | Inductance (μH) | Q (min.) | Test Frequency of L (MHz) | Inductance Adjustable Range (%) | Note |
|---|---|---|---|---|---|
| 613BN-9020Z | 2.0 | 45 | 7.96 | ±3 | High Frequency |
| 613BN-9022Z | 2.2 | 45 | 7.96 | ±3 | High Frequency |
| 613BN-9024Z | 2.4 | 45 | 7.96 | ±3 | High Frequency |
| 613BN-9027Z | 2.7 | 45 | 7.96 | ±3 | High Frequency |
| 613BN-9030Z | 3.0 | 45 | 7.96 | ±3 | High Frequency |
| 613BN-9033Z | 3.3 | 45 | 7.96 | ±3 | High Frequency |
| 613BN-9036Z | 3.6 | 45 | 7.96 | ±3 | High Frequency |
| 613BN-9039Z | 3.9 | 45 | 7.96 | ±3 | High Frequency |
| 613BN-9043Z | 4.3 | 45 | 7.96 | ±3 | High Frequency |
| 613BN-9047Z | 4.7 | 45 | 7.96 | ±3 | High Frequency |
| 613BN-9051Z | 5.1 | 45 | 7.96 | ±3 | High Frequency |
| 613BN-9056Z | 5.6 | 45 | 7.96 | ±3 | High Frequency |
| 613BN-9062Z | 6.2 | 45 | 7.96 | ±3 | High Frequency |
| 613BN-9068Z | 6.8 | 45 | 7.96 | ±3 | High Frequency |
| 613BN-9075Z | 7.5 | 45 | 7.96 | ±3 | High Frequency |
| 613BN-9082Z | 8.2 | 45 | 7.96 | ±3 | High Frequency |
| 613BN-9091Z | 9.1 | 45 | 7.96 | ±3 | High Frequency |
| 613BN-9100Z | 10 | 40 | 2.52 | ±4 | High Frequency |
| 613BN-9110Z | 11 | 40 | 2.52 | ±4 | High Frequency |
| 613BN-9120Z | 12 | 40 | 2.52 | ±4 | High Frequency |
| 613BN-9130Z | 13 | 40 | 2.52 | ±4 | High Frequency |
| 613BN-9150Z | 15 | 40 | 2.52 | ±4 | High Frequency |
| 613BN-9160Z | 16 | 40 | 2.52 | ±4 | High Frequency |
| 613BN-9180Z | 18 | 40 | 2.52 | ±4 | High Frequency |
| 613BN-9200Z | 20 | 40 | 2.52 | ±4 | High Frequency |
| 613BN-9220Z | 22 | 40 | 2.52 | ±5 | High Frequency |
| 613BN-9240Z | 24 | 40 | 2.52 | ±5 | High Frequency |
| 613BN-9270Z | 27 | 40 | 2.52 | ±5 | High Frequency |
| 613BN-9300Z | 30 | 40 | 2.52 | ±5 | High Frequency |
| 613BN-9330Z | 33 | 40 | 2.52 | ±5 | High Frequency |
| 613BN-9360Z | 36 | 40 | 2.52 | ±5 | High Frequency |
| 613BN-9390Z | 39 | 40 | 2.52 | ±5 | High Frequency |
| 613BN-9430Z | 43 | 40 | 2.52 | ±5 | High Frequency |
| 613BN-9470Z | 47 | 40 | 2.52 | ±5 | High Frequency |
| 613BN-9510Z | 51 | 40 | 2.52 | ±5 | High Frequency |
| 613BN-9560Z | 56 | 40 | 2.52 | ±5 | High Frequency |
| 613BN-9620Z | 62 | 35 | 2.52 | ±5 | High Frequency |
| 613AN-9680Z | 68 | 30 | 2.52 | ±5 | |
| 613AN-9750Z | 75 | 30 | 2.52 | ±5 | |
| 613AN-9820Z | 82 | 30 | 2.52 | ±5 | |
| 613AN-9910Z | 91 | 30 | 2.52 | ±5 | |
| 613AN-9101Z | 100 | 45 | 0.796 | ±5 | |
| 613AN-9111Z | 110 | 45 | 0.796 | ±5 | |
| 613AN-9121Z | 120 | 45 | 0.796 | ±5 | |
| 613AN-9131Z | 130 | 45 | 0.796 | ±5 | |
| 613AN-9151Z | 150 | 45 | 0.796 | ±5 | |
| 613AN-9161Z | 160 | 45 | 0.796 | ±5 | |
| 613AN-9181Z | 180 | 45 | 0.796 | ±5 | |
| 613AN-9201Z | 200 | 45 | 0.796 | ±5 | |
| 613AN-9221Z | 220 | 45 | 0.796 | ±5 | |
| 613AN-9241Z | 240 | 45 | 0.796 | ±5 | |
| 613AN-9271Z | 270 | 45 | 0.796 | ±5 | |
| 613AN-9301Z | 300 | 45 | 0.796 | ±5 | |
| 613AN-9331Z | 330 | 45 | 0.796 | ±5 | |
| 613AN-9361Z | 360 | 45 | 0.796 | ±5 | |
| 613AN-9391Z | 390 | 45 | 0.796 | ±5 | |
| 613AN-9431Z | 430 | 45 | 0.796 | ±5 | |
| 613AN-9471Z | 470 | 45 | 0.796 | ±5 | |
| 613AN-9511Z | 510 | 45 | 0.796 | ±5 | |
| 613AN-9561Z | 560 | 45 | 0.796 | ±5 | |
| 613AN-9621Z | 620 | 45 | 0.796 | ±5 | |
| 613AN-9981Z | 680 | 45 | 0.796 | ±5 | |

## TYPE 5CDL

**For Reflow Soldering**
***Frequency Range:*** 200kHz-15MHz
***Inductance Range:*** 1-300μH
***Temperature Coefficient:*** 50 ± 200ppm/ºC





## *Quality Features:*

- Wide inductance range, ideal for AM and FM IFT applications.
- Low profile version of 5CD has ultra-thin profile for space critical designs. Only 2mm high. Use for ultra-thin pocket radio.
- Coil form is specially designed with a high temperature material, highly resistant to damage and distortion during soldering.
- Excellent shock and vibration resistance.
- TOKO features unique manufacturing technique to create a smooth and consistent torque level between tuning core and coil form. Reduces core damage during alignment and firmly holds final setting.
- Package design is ideal for automatic assembly. Available on 12mm embossed tape reel or tray.
- Operating Temperature −10º to +60ºC.
- Reflows at 235 to 245°C, 5 to 10 seconds, maximum.

## STANDARD COILS SELECTION GUIDE

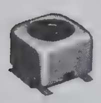
The Part Numbers shown in the table below are standard coils, which are readily available, TOKO will design and manufacture modified and custom coils with specific characteristics to meet your requirements. If you do not find the coil for your application in this catalog, please contact our sales office or representative office.

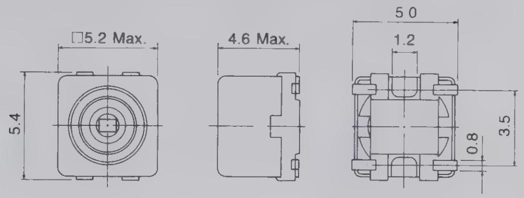
### *TYPE 5CDL*

| TOKO Part Number | Tuning Capacitance or Inductance | Turns Ratio 1-3 : 4-6 | Q (min.) | Test Frequency |
|---|---|---|---|---|
| L5CDLN-1105IB | 430PF | 126 / — | 30 | 455kHz |
| L5CDLN-1151AQ | 560PF | 110 / 9 | 33 | 455kHz |
| L5CDLN-1055 | 1000PF | 79 / 21 | 27 | 455kHz |
| L372PN-1094AN | 47PF | 18 / 2 | 30 | 10.7MHz |
| L372PN-1141Z | 82PF | 13 / — | 35 | 10.7MHz |
| L372PN-1015 | 100PF | 12 / 2 | 33 | 10.7MHz |
| L372PN-1238Z | 56μH | 52 / — | 30 | 2.52MHz |
| L5CDLN-1211IB | 109μH | 78 / — | 36 | 796KHz |

## TYPE 5CBG

**For Reflow Soldering**
***Frequency Range:*** 30-150MHz
***Inductance Range:*** 0.02-1μH
***Temperature Coefficient:*** TC (L) 0±120ppm/°C





## *Quality Features:*

- Ideal for high frequency microcircuit applications.
- Low profile, only 4.6mm high.
- High Q (typically 50) gives exceptional performance for this size package.
- TOKO's original concept features two horizontal slots on form to reduce stray capacitance, improve stability and attain higher frequency.
- Four vertical slots on form bring windings to terminals, producing a winding that precisely duplicates center frequency specifications.
- Coil form is specially designed with a high temperature material, highly resistant to damage and distortion during soldering.
- One piece molded construction for good inductance temperature coefficient (60 ±150ppm/°C) insures minimal drift.
- TOKO features unique manufacturing technique to create a smooth and consistent torque level between tuning core and coil form. Reduces core damage during alignment and firmly holds final setting.
- Plated brass case assures good electrostatic shielding.
- Package design ideal for automatic assembly. Available on 12mm embossed tape reel.
- Operating Temperature −10°C to 60°C.
- Reflows at 235 to 245°C, 5 to 10 seconds, maximum.
- Available with up to four terminals to provide secondary winding or tap.

## STANDARD COILS SELECTION GUIDE

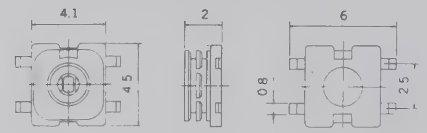
The Part Numbers shown in the table below are standard coils, which are readily available, TOKO will design and manufacture modified and custom coils with specific characteristics to meet your requirements. If you do not find the coil for your application in this catalog, please contact our sales office or representative office.

### *TYPE 5CBG*

| TOKO Part Number | Inductance (μH) | Q (min.) | Test Frequency (MHz) |
|---|---|---|---|
| 609AN-1042Z | 0.1 | 38 | 100 |
| 609AN-1030Z | 0.18 | 46 | 100 |
| 609AN-1158Z | 0.3 | 32 | 50 |
| 609AN-1053Z | 0.47 | 35 | 50 |
| 609AN-1106Z | 0.68 | 33 | 50 |
| 609AN-1169Z | 0.82 | 32 | 50 |
| 609AN-1043Z | 0.93 | 32 | 50 |
| 609AN-1170Z | 1.6 | 27 | 40 |

## TYPE 5CBL

**For Reflow Soldering**
***Frequency Range:*** 30-200MHz
***Inductance Range:*** 0.03-1.2$\mu$H
***Temperature Coefficient:*** 150ppm/°C, max.



### *Quality Features:*

- Ideal for hybrid microcircuits and high frequency applications.
- An ultra-thin profile for space critical designs. Only 2mm high.
- Single molded construction for good inductance temperature coefficient (60ppm/°C typical) insures minimal drift.
- High Q (typically 50) gives exceptional performance for this size package.
- TOKO's original concept features two horizontal slots on form to reduce stray capacitance, improve stability and attain higher frequency.
- Four vertical slots on form bring windings to terminals, producing a winding that precisely duplicates center frequency specifications.
- Coil form is specially designed with a high temperature material, highly resistant to damage and distortion during soldering.
- TOKO features unique manufacturing technique to create a smooth and consistent torque level between tuning core and coil form. Reduces core damage during alignment and firmly holds final setting.
- Package design ideal for automatic assembly. Available on 12mm embossed tape reel.
- Operating Temperature −10°C to +60°C.
- Reflows at 235 to 245°C, 5 to 10 seconds, maximum.
- Available with up to four terminals to provide secondary winding or tap.

## STANDARD COILS SELECTION GUIDE

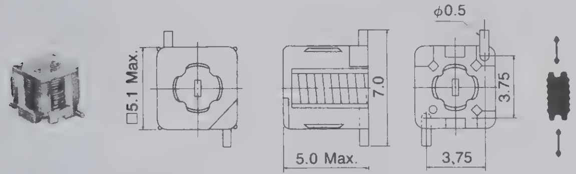
The Part Numbers shown in the table below are standard coils, which are readily available, TOKO will design and manufacture modified and custom coils with specific characteristics to meet your requirements. If you do not find the coil for your application in this catalog, please contact our sales office or representative office.

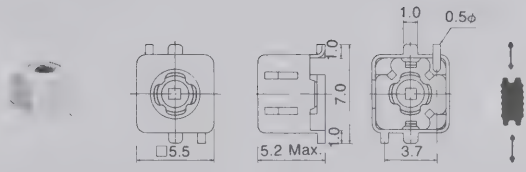
### *TYPE 5CBL*

| TOKO Part Number | Inductance ($\mu$H) | Turn Ratio 1-3 : 1-6 | Q (min.) | Test Frequency (MHz) |
|---|---|---|---|---|
| 370AN-1414Z | 0.045 | 2 : — | 40 | 100 |
| 370AN-1406Z | 0.076 | 3 : — | 40 | 100 |
| 370AN-1405ZW | 0.12 | 4 : 1 ½ | 50 | 100 |
| 370AN-1413ZW | 0.18 | 5 : 1 ½ | 55 | 100 |

## MC152

***Close Wound***
***Frequency Range:*** 30-150MHz (with ferrite core)
***Inductance Range:*** 10-120nH (without case)
7-80nH (with case)
***Temperature Coefficient:*** 150±100ppm/°C (without case)
100±100ppm/°C (with case)





### *Quality Features:*

- Ultra compact surface mount molded coil for RF stage in pager and small sized telecommunications equipment.
- Low profile, 5mm high.
- Suitable for most applications in the range of 30-200MHz. Ferrties available are optimum over the 30-150MHz range. (See selection guide (2) regarding brass cores.)
- Precise winding positioning is achieved on torsion machine to exacting specs before coil form is molded. This assures a constant winding pitch which provides outstanding uniformity in inductance, minimum stray capacitance, and optimum Q characteristics at high frequency.
- Winding and terminals are one integral piece, essentially eliminating "connection failures". One piece construction also makes these coils highly resistant to shock, vibration, humidity and temperature change.
- A location tab is provided on one side to indicate the starting side of the winding and to facilitate correction positioning into PWB.
- Color for turns identification.
- Package design is ideal for automatic assembly. Available on 12mm embossed tape reel.
- Operating temperature −10°C to +60°C
- Reflow at 235 to 245°C, 10 seconds maximum.

## STANDARD COILS SELECTION GUIDE

The Part Numbers shown in the table below are standard coils, which are readily available. TOKO will design and manufacture modified and custom coils to meet your requirements. If you do not find the coil for your application , please contact our sales office or representative office.

(1) This coil is available with an optional shield to permit the use of several coils in close proximity without interference and improve mounting stability. However the optional shield will reduce Q by abcut 20%.
(2) Alternate use of brass core in items listed will increase the usable frequency of any specific coil form. However, inductance is reduced. These cores amy also be substituted for ferrite as a means of lowering Q.
(3) Maximum capacitance value: with core 2 turns off from top of case.
(4) Qu measured by Q meter.
(5) Inductance measured by HP-4191A at 100MHz ... the values reference only.

| Without case TOKO No. | Turns | C Range | QU | Colour | Inductance |
|---|---|---|---|---|---|
| Ferrite Core | | | | | |
| E558CN-100020 | 1½ | 80.4pF±2% | 90±20% (at 100MHz) | White | 32nH |
| E558CN-100021 | 2½ | 53.8pF±3% | 110±20% (at 100MHz) | Violet | 47nH |
| E558CN-100022 | 3½ | 37.0pF±3% | 110±20% (at 100MHz) | Orange | 68nH |
| E558CN-100023 | 4½ | 28.0pF±3% | 115±20% (at 100MHz) | Yellow | 90nH |
| * E558CN-100024 | 5½ | 22.7pF±3% | 120±20% (at 100MHz) | White | 112nH |
| * E558CN-100025 | 6½ | 17.8pF±3% | 120±20% (at 100MHz) | Blue | 142nH |
| Air core | | | | | |
| E558HN-100096 | 1½ | ** 86.9pF±10% | 85±20% (at 100MHz) | White | 29nH |
| E558HN-100097 | 2½ | ** 61.2pF±10% | 100±20% (at 100MHz) | Violet | 41nH |
| E558HN-100098 | 3½ | ** 44.9pF±10% | 105±20% (at 100MHz) | Orange | 56nH |
| E558HN-100099 | 4½ | ** 34.6pF±10% | 105±20% (at 100MHz) | Yellow | 73nH |
| E558HN-100100 | 5½ | ** 27.9pF±10% | 120±20% (at 100MHz) | White | 91nH |
| E558HN-100101 | 6½ | 22.9pF±10% | 120±20% (at 100MHz) | Blue | 111nH |
| Brass core | | | | | |
| E558AN-100040 | 1½ | 88.6pF± 1% | 52±20% (at 100MHz) | White | 29nH |
| E558AN-100041 | 2½ | 66.5pF± 3% | 63±20% (at 100MHz) | Violet | 38nH |
| E558AN-100042 | 3½ | 52.4pF± 3% | 56±20% (at 100MHz) | Orange | 48nH |
| E558AN-100043 | 4½ | 44.1pF± 2% | 50±20% (at 100MHz) | Yellow | 57nH |
| E558AN-100044 | 5½ | 35.3pF± 2% | 50±20% (at 100MHz) | White | 72nH |
| E558AN-100045 | 6½ | 30.0pF± 2% | 50±20% (at 100MHz) | Blue | 84nH |

*Minimum inductance value with core 2 turns off from top of bobbin.
**C Range shows tolerance

| With case TOKO No. | Turns | C Range | QU | Colour | Inductance |
|---|---|---|---|---|---|
| Ferrite Core | | | | | |
| E558CNA-100032 | 1½ | 89.0pF ± 1.5% | 63 ± 20% (at 100MHz) | White | 28nH |
| E558CNA-100033 | 2½ | 64.2pF ± 2.0% | 77 ± 20% (at 100MHz) | Violet | 39nH |
| E558CNA-100034 | 3½ | 48.2pF ± 2.0% | 76 ± 20% (at 100MHz) | Orange | 53nH |
| E558CNA-100035 | 4½ | 37.9pF ± 2.0% | 81 ± 20% (at 100MHz) | Yellow | 67nH |
| * E558CNA-100036 | 5½ | 31.9pF ± 2.0% | 86 ± 20% (at 100MHz) | White | 79nH |
| * E558CNA-100037 | 6½ | 27.0pF ± 2.0% | 80 ± 20% (at 100MHz) | Blue | 94nH |
| Brass core | | | | | |
| E558ANA-100050 | 1½ | 92.2pF ± 1.0% | 58 ± 20% (at 100MHz) | White | 27nH |
| E558ANA-100051 | 2½ | 73.6pF ± 2.0% | 55 ± 20% (at 100MHz) | Violet | 34nH |
| E558ANA-100052 | 3½ | 59.1pF ± 2.0% | 54 ± 20% (at 100MHz) | Orange | 43nH |
| E558ANA-100053 | 4½ | 48.7pF ± 2.0% | 52 ± 20% (at 100MHz) | Yellow | 52nH |
| E558ANA-100054 | 5½ | 41.6pF ± 2.0% | 49 ± 20% (at 100MHz) | White | 61nH |
| E558ANA-100055 | 6½ | 37.1pF ± 2.0% | 47 ± 20% (at 100MHz) | Blue | 68nH |
| Air core | | | | | |
| E558HNA-100090 | 1½ | ** 90.7pF ± 10% | 60 ± 20% (at 100MHz) | White | 28nH |
| E558HNA-100091 | 2½ | ** 68.2pF ± 10% | 70 ± 20% (at 100MHz) | Violet | 37nH |
| E558HNA-100092 | 3½ | ** 52.8pF ± 10% | 80 ± 20% (at 100MHz) | Orange | 48nH |
| E558HNA-100093 | 4½ | ** 42.7pF ± 10% | 80 ± 20% (at 100MHz) | Yellow | 59nH |
| E558HNA-100094 | 5½ | ** 35.5pF ± 10% | 86 ± 20% (at 100MHz) | White | 71nH |
| E558HNA-100095 | 6½ | 30.3pF ± 10% | 83 ± 20% (at 100MHz) | Blue | 84nH |

*Minimum inductance value with core 2 turns off from top of bobbin.
**C Range shows tolerance

# VARIABLE INDUCTORS

## *Variable Inductors*

Our thirty plus years of engineering excellence and experience has made us the World's largest manufacturer of small coils. Many of the items offered in this catalog have patented features which make them unique to the electronics industry. Smaller size, wider frequency ranges, closer tolerances and other superior characteristics of our products make TOKO a leader in Variable Coils. This solid value for the money has made TOKO the standard by which others are judged.

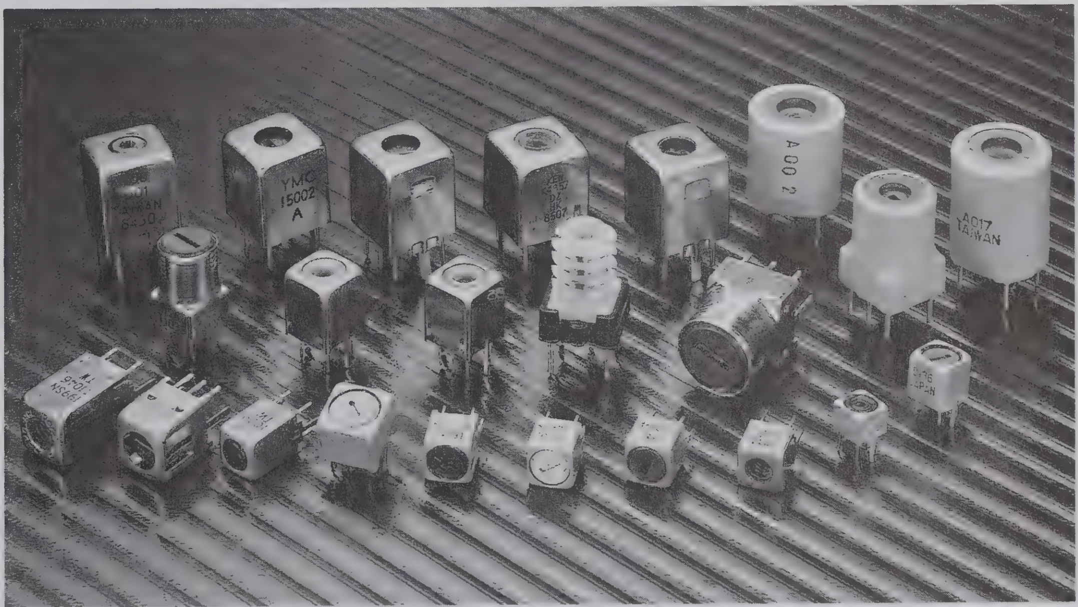
TOKO Variable Coils are manufactured utilizing the most progressive automatic winding and assembly equipment in the industry. TOKO engineers have designed production equipment so exacting and advanced that uniformity and reliability are assured.

Most of the Variable Coils in this section can be tuned by as much as +40%/−35% of their nominal inductance value. The ranges of certain types may be restricted due to variations from lot to lot in core material, windings and internal capacitors (where applicable). TOKO can guarantee Q typically ±6% of nominal inductance, depending upon the size of the coil and application.

When adjusting the coil from the original specified position, please be aware that corresponding changes in temperature drift characteristics and Q will take place. If inductance is the only concern and Q characteristics are not important, then tuning to the range limits is acceptable. If temperature drift and Q characteristics are important, we suggest selecting the next higher or lower range device.

The Q and temperature coefficient can be achieved at the extremes of the adjustment ranges, but we suggest ascertaining the effects of substantial deviation from the nominal inductance value in critical applications.

Temperature coefficient values are shown for each type in either TC(L) or TC(F). Tighter temperature coefficients may be achieved depending upon the coil type and application.



TOKO
TOKO AMERICA, INC.

# VARIABLE INDUCTORS

## *Internal Matching Capacitors Option*

We recommend selecting the option of internal matching ceramic capacitors when available. This option offers the most stable temperature coefficient possible, conserves board space, saves design and assembly time and eliminates problems of sourcing capacitors from a separate vendor.

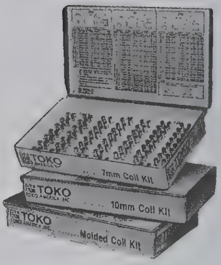
**Standard Ceramic Capacitor Values Available:**
The following table shows the standard capacitance values that are available (in pF). Each type of variable coil specifies its own range of values from this table. If you require a value not listed here (as standard), please specify your requirement using the Custom/Modified Request Form located in the rear of this catalog.

**Connection Diagrams**
All connection diagrams depict windings as would be seen viewing the coil from the bottom.

**Standard Capacitor Increments**
5, 6, 7, 8, 9pF, 10, 12, 15, 18, 22, 27, 33, 39, 47, 56, 68, 82, 100, 120, 150, 180, 390, 470, 1000, 1500, and 6800.

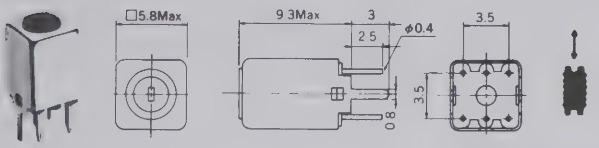
## *Prototyping Kits*

***Prototyping and experimenting kits are available for the 5mm, 7mm, 10mm, and other types. Contact the nearest TOKO AMERICA sales office for details and ordering information.***



## 5mm TYPE 5A

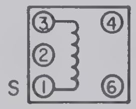
***Frequency Range:*** 30MHz-150MHz
***Inductance Range:*** .03μH-.3μH
***Temperature Coefficient:*** 150ppm/°C max



*Tuning Method*
*Tuning Tool: #71-1296*
*Holder: 71-1474*

### Quality Features:

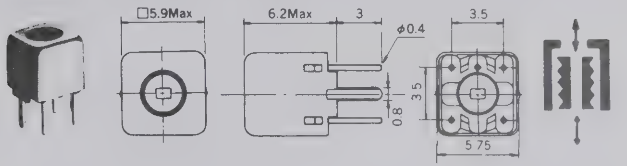
- We offer RF's to match most VHF tuning circuits. Saves you design time and assures compatibility of components.
- Excellent resistance to humidity, vibration and shock due to integral molded base and bobbin.
- Solenoid design permits the use of thicker winding wire for improved Q, minimal drift, and added stability in humid conditions.
- Absence of pot core makes very low inductances achievable, making this coil ideal for VHF circuits.
- The Q value is exceptionally steady throughout the tuning range.
- Optimum final tuning due to the large specified percentage adjustment range.
- Plated brass can, to provide magnetic and electrostatic shielding.
- Presoldered terminal pins ensure a highly reliable PCB connection.



CONNECTION
Z

## 5mm TYPE 5K

***Frequency Range:*** 30MHz-150MHz
***Inductance Range:*** .08μH-1.0μH
***Temperature Coefficient:*** 220 ± 150ppm/°C



*Tuning Method*
*Tuning Tool: #71-1504*

### Quality Features:

- IFT's to match most SAW and crystal filters. Saves you design time and assures component compatibility.
- Integral molded base and bobbin provides excellent resistant to humidity, vibration and shock and improves Q because it allows the use of thicker wire.
- The dual, closely spaced slots on the bobbin produces very high Q (70), tight tolerances, stable winding impedance, low distributed capacitance, low TC and added stability in humid conditions.
- Optimum final tuning due to the large specified percentage adjustment range.
- Plated brass can, to provide static and magnetic shielding. Pot core provides additional magnetic shielding ensuring low EMI.
- Presoldered terminal pins ensure a highly reliable PCB connection.

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

1. This device comes with 5 terminals to accommodate a transformer winding and/or tap.
2. Presoldered ground tabs are available.

### TYPE 5A

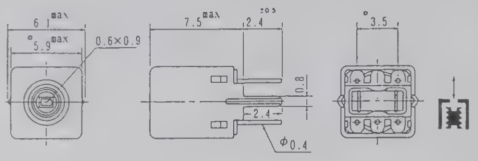
| TOKO Part Number | Inductance Range (μH) | Q (min.) | Test Frequency (MHz) |
|---|---|---|---|
| 210SNS-T1005Z | 0.033 ± 3% | 40 | 100 |
| 210SNS-T1006Z | 0.039 ± 3% | 40 | 100 |
| 210SNS-T1007Z | 0.047 ± 3% | 40 | 100 |
| 210SNS-T1008Z | 0.056 ± 6% | 40 | 100 |
| 210SNS-T1009Z | 0.068 ± 6% | 40 | 100 |
| 210SNS-T1010Z | 0.082 ± 6% | 40 | 100 |
| 210SNS-T1011Z | 0.10 ± 6% | 40 | 75 |
| 210SNS-T1012Z | 0.12 ± 6% | 40 | 75 |
| 210SNS-T1013Z | 0.15 ± 6% | 40 | 75 |
| 210SNS-T1014Z | 0.18 ± 6% | 40 | 75 |
| 210SNS-T1015Z | 0.22 ± 6% | 40 | 75 |
| 210SNS-T1016Z | 0.27 ± 6% | 40 | 75 |
| 210SNS-T1017Z | 0.33 ± 6% | 40 | 75 |

### TYPE 5K

| TOKO Part Number | Inductance Range (μH) | Q (min.) | Test Frequency (MHz) |
|---|---|---|---|
| 294SN-T1008Z | 0.08 ± 2% | 45 | 75.0 |
| 294SN-T1009Z | 0.10 ± 6% | 45 | 75.0 |
| 294SN-T1010Z | 0.15 ± 6% | 45 | 75.0 |
| 294SN-T1011Z | 0.22 ± 6% | 45 | 45.0 |
| 294SN-T1012Z | 0.33 ± 6% | 45 | 45.0 |
| 294SN-T1013Z | 0.47 ± 6% | 45 | 45.0 |
| 294SN-T1014Z | 0.68 ± 6% | 45 | 45.0 |
| 294SN-T1015Z | 1.00 ± 6% | 45 | 30.0 |

## 5mm TYPE 5KM

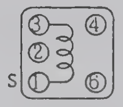
***Frequency Range:*** 30 ~ 150MHz
***Inductance Range:*** 0.1 ~ 10μH
***Temperature Coefficient:*** Of Inductor TC(L) 80 ± 120ppm/°C
With Internal Capacitor TC(F) 0 ± 100ppm/°C
***Internal Capacitance Values:*** 18,22,27,33,39,47, and 51pF(PH/N-150)



*Tuning Method*
*Tuning Tool:*
*Standard Blade (–)*

## Quality Features:

- Type 5KM is a low profile version (only 7.5mm high max)
- Ideal as a voltage control oscillation coil and as a quadrature detector coil because of stable impedance in each winding.
- Excellent for matching to crystal or ceramic filters.
- Spiral wound with high number of closely spaced slots on form render low distributed capacitance, low temperature coefficient, and added stability in humid conditions.
- Center frequency spec is duplicated more precisely due to the coil having 4 horizonatl slots and also have 4 vertical slots to bring windings down to terminals. This assures consistent and precise center frequency, Q and inductance.
- Integral molded base and coil form provide outstanding resistance to shock, vibration and humidity.
- Plated brass can, to provide static and magnetic shielding. Pot core provides additional magnetic shielding, assuring low EMI.



*CONNECTION*
*Z*

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

1. The 5KM coil is available with the following internal ceramic capacitors: 18, 22, 27, 33, 39, 47 and 51pF(PH/N-150)
2. This coil comes with 5 terminals to accommodate transformer winding and/or tap.
3. Freon cleaning solvent suggested. Contact TOKO for other approved cleaning solvents.

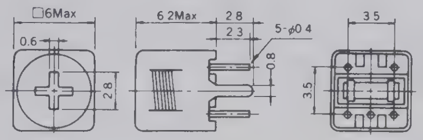
### TYPE 5KM

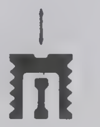
| TOKO Part Number | Inductance Range (μH) | Qu(min.) | Test Frequency (MHz) |
|---|---|---|---|
| 369SNS-1646Z | 0.10 ± 5% | 35 | 50 |
| 369SNS-1647Z | 0.12 ± 5% | 35 | 50 |
| 369SNS-1648Z | 0.15 ± 5% | 35 | 50 |
| 369SNS-1649Z | 0.18 ± 6% | 35 | 50 |
| 369SNS-1650Z | 0.22 ± 6% | 35 | 50 |
| 369SNS-1651Z | 0.27 ± 6% | 35 | 50 |
| 369SNS-1652Z | 0.33 ± 6% | 35 | 50 |
| 369SNS-1653Z | 0.39 ± 6% | 35 | 50 |
| 369SNS-1654Z | 0.47 ± 6% | 35 | 50 |
| 369SNS-1655Z | 0.56 ± 6% | 35 | 50 |
| 369SNS-1656Z | 0.68 ± 6% | 35 | 50 |
| 369SNS-1657Z | 0.82 ± 6% | 35 | 50 |
| 369SNS-1658Z | 1.00 ± 6% | 25 | 7.96 |
| 369SNS-1659Z | 1.20 ± 6% | 25 | 7.96 |
| 369SNS-1660Z | 1.50 ± 6% | 25 | 7.96 |

| TOKO Part Number | Inductance Range (μH) | Qu(min.) | Test Frequncy (MHz) |
|---|---|---|---|
| 369SNS-1661Z | 1.80 ± 6% | 25 | 7.96 |
| 369SNS-1662Z | 2.20 ± 6% | 25 | 7.96 |
| 369SNS-1663Z | 2.70 ± 6% | 25 | 7.96 |
| 369SNS-1664Z | 3.30 ± 6% | 25 | 7.96 |
| 369SNS-1665Z | 3.90 ± 6% | 25 | 7.96 |
| 369SNS-1666Z | 4.70 ± 6% | 25 | 7.96 |
| 369SNS-1667Z | 5.60 ± 5% | 25 | 7.96 |
| 369SNS-1668Z | 6.80 ± 5% | 25 | 7.96 |
| 369SNS-1676Z | 8.20 ± 5% | 25 | 7.96 |
| 369SNS-1677Z | 10.00 ± 3% | 25 | 7.96 |

## 5mm TYPE 5P

***Frequency Range:*** 5P - 200kHz-2MHz
5P High Frequency - 1MHz-15MHz
***Inductance Range:*** 5P - 30μH-1mH
5P High Frequency - 1μH-40μH
***Temperature Coefficient:*** Of Inductor TC(L) 220 ± 220ppm/°C
With Internal Capacitor TC(F) 0 ± 250ppm/°C
***Optional Internal Capacitance Value:*** (1) (2)

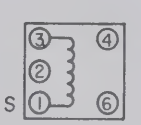




*Tuning Method*
*Tuning Tool: #71-1468*
*(3)*

### *Quality Features:*

- Low profile for tight-spaced designs.
- Unique design features a cup core adjustor threaded directly into the shield, allowing the use of larger cores. This produces superior, large signal characteristics normally associated with 7mm types. The design also allows the use of a larger core which greatly improves saturation levels. The base has also been made more accessible for prototyping.
- Excellent for matching to crystal or ceramic filters, saving design time and assuring component compatibility. See Note 4.
- The cup core is waxed to prevent core locking during fluxing/soldering operations.
- Stand-offs on all four corners keep the coil straight during wave soldering.
- Optimum final tuning, due to the large specified percentage adjustment range.
- Plated brass can, to provide static and magnetic shielding. Cup core provides additional magnetic shielding, assuring low EMI.
- Presoldered terminal pins ensure a highly reliable PCB connection.



*CONNECTION*
*Z*

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

1. The 5P is available with the following internal ceramic capacitors: 180, 470, 1500pF.
2. 5P High Frequency is available with thermal ceramic capacitors. 18-47 on Page 4.
3. Phillips (+) screwdriver only available.
4. This device has 5 terminals for transformer winding and/or tap.
5. Presoldered ground tabs available.

### *TYPE 5P*

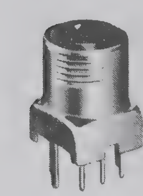
| TOKO Part Number | Inductance Range (μH) | Q (min.) | Test Frequency (MHz) |
|---|---|---|---|
| 5PNR-T1005Z | 33.0 ± 5% | 40 | 2.52 |
| 5PNR-T1006Z | 39.0 ± 5% | 40 | 2.52 |
| 5PNR-T1007Z | 47.0 ± 5% | 40 | 2.52 |
| 5PNR-T1008Z | 56.0 ± 5% | 40 | 2.52 |
| 5PNR-T1009Z | 68.0 ± 5% | 40 | 2.52 |
| 5PNR-T1010Z | 82.0 ± 5% | 40 | 2.52 |
| 5PNR-T1011Z | 100.0 ± 5% | 40 | .796 |
| 5PNR-T1012Z | 120.0 ± 5% | 40 | .796 |
| 5PNR-T1013Z | 150.0 ± 5% | 40 | .796 |
| 5PNR-T1014Z | 180.0 ± 5% | 40 | .796 |
| 5PNR-T1015Z | 220.0 ± 5% | 40 | .796 |
| 5PNR-T1016Z | 270.0 ± 5% | 40 | .796 |
| 5PNR-T1017Z | 330.0 ± 5% | 40 | .796 |
| 5PNR-T1018Z | 390.0 ± 5% | 40 | .796 |
| 5PNR-T1019Z | 470.0 ± 5% | 40 | .796 |
| 5PNR-T1020Z | 560.0 ± 5% | 40 | .796 |
| 5PNR-T1021Z | 680.0 ± 5% | 40 | .796 |

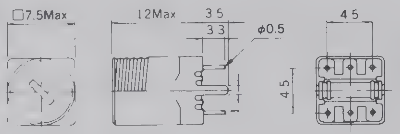
### *TYPE 5P High Frequency*

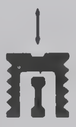
| TOKO Part Number | Inductance Range (μH) | Q (min.) | Test Frequency (MHz) |
|---|---|---|---|
| 332PN-T1012Z | 1.0 ± 5% | 55 | 7.96 |
| 332PN-T1013Z | 1.2 ± 5% | 55 | 7.96 |
| 332PN-T1014Z | 1.5 ± 5% | 55 | 7.96 |
| 332PN-T1015Z | 1.8 ± 5% | 55 | 7.96 |
| 332PN-T1016Z | 2.2 ± 5% | 55 | 7.96 |
| 332PN-T1017Z | 2.7 ± 5% | 55 | 7.96 |
| 332PN-T1018Z | 3.3 ± 5% | 55 | 7.96 |
| 332PN-T1019Z | 3.9 ± 5% | 55 | 7.96 |
| 332PN-T1020Z | 4.7 ± 5% | 55 | 7.96 |
| 332PN-T1021Z | 5.6 ± 5% | 55 | 7.96 |
| 332PN-T1022Z | 6.8 ± 5% | 55 | 7.96 |
| 332PN-T1023Z | 8.2 ± 5% | 55 | 7.96 |
| 332PN-T1024Z | 10.0 ± 5% | 55 | 2.52 |
| 332PN-T1025Z | 12.0 ± 5% | 55 | 2.52 |
| 332PN-T1026Z | 15.0 ± 5% | 55 | 2.52 |
| 332PN-T1027Z | 18.0 ± 5% | 55 | 2.52 |
| 332PN-T1028Z | 22.0 ± 5% | 55 | 2.52 |
| 332PN-T1029Z | 27.0 ± 5% | 55 | 2.52 |

## 7mm TYPE 7P

***Frequency Range:*** 200kHz-2MHz
***Inductance Range:*** 10μH-2.6mH
***Temperature Coefficient:*** Of Inductor TC(L) 220 ± 220ppm/°C
and TC(L) 750 ± 500ppm/°C
With Internal Capacitor TC(F) 0 ± 250ppm/°C
***Internal Capacitance Values:*** 150-390pF (1)



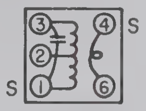




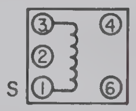
*Tuning Method*
*Tuning Tool:*
*Standard Blade (–)*

## *Quality Features:*

- Unique design features a cup core adjustor threaded directly into the shield, allowing the use of larger cores. This produces superior, large signal characteristics normally associated with 10mm types. The design also allows the use of larger cores which greatly improves saturation levels. The base has also been made more accessible for prototyping.
- This patented design is smaller than plastic support styles with similar characteristics. For an even lower profile coil, see Type 7PL.
- Ideal for use as an AM IFT coil and in oscillator circuits due to its patented design, which produces a high Q (typically 70-140) and a wide inductance range. The Q value is exceptionally steady throughout the tuning range (alignment) to make impedance matching between circuits faster and easier.
- The coil form is wax impregnated to form a moisture barrier against corrosion and to prevent microphonics (howling).
- Optimum final tuning, due to the large specified percentage adjustment range.
- Plated brass can, to provide static and magnetic shielding. Cup core provides additional magnetic shielding, assuring low EMI.
- Presoldered terminal pins ensure a highly reliable PCB connection.
- Base is thick, high-temperature UL 94V-1 grade phenol to protect coil during wave soldering.



*CONNECTION*
*NO*



*CONNECTION*
*Z*

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

1. The 7P coil is available with the following internal ceramic capacitors: 150, 180, 390pF. Optional values are shown on Page 4 from 5-100pF.
2. Presoldered ground tabs available.
3. Also accepts blade (–) screwdriver.
4. This device comes with 6 terminals to accommodate a transformer winding and/or tap.

### *TYPE 7P*

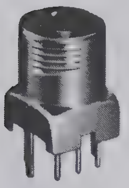
| TOKO Part Number | Inductance Range (μH) | Turns Ratio: 1-3/2-3 | Turns Ratio: 1-3/4-6 | Q (min.) | Test Freq. (MHz) |
|---|---|---|---|---|---|
| 7BR-151208NO | 150 ± 8% | 65:63 | 65:8 | 60 | 1.4 |
| 7BR-271208NO | 270 ± 8% | 43:42 | 43:4 | 60 | 1.4 |
| 7BR-271308NO | 270 ± 8% | 86:83 | 43:4 | 60 | 1.4 |
| 7BR-331208NO | 330 ± 8% | 95:93 | 95:8 | 60 | 1.4 |
| 7BR-331308NO | 330 ± 8% | 95:92 | 95:8 | 60 | 1.4 |
| 7BR-361208NO | 360 ± 8% | 50:49 | 25:2 | 60 | 1.4 |
| 7BR-361308NO | 360 ± 8% | 100:97 | 25:2 | 60 | 1.4 |
| A7BRS-T1040Z | 100 ± 10% | | | 80 | .796 |
| A7BRS-T1041Z | 120 ± 10% | | | 80 | .796 |
| A7BRS-T1042Z | 150 ± 10% | | | 80 | .796 |
| A7BRS-T1043Z | 180 ± 10% | | | 80 | .796 |
| A7BRS-T1044Z | 220 ± 10% | | | 80 | .796 |
| A7BRS-T1045Z | 270 ± 10% | | | 80 | .796 |
| A7BRS-T1046Z | 330 ± 10% | | | 80 | .796 |

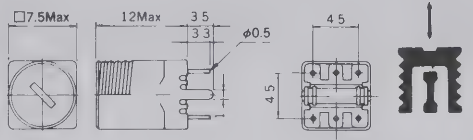
### *TYPE 7P with Internal Capacitor*

| TOKO Part Number | Tuning Range (pF) | Turns Ratio: 1-3/2-3 | Turns Ratio: 1-3/4-6 | Q (min.) | Test Freq. (kHz) |
|---|---|---|---|---|---|
| 7LC-252142NO | 180 + 5(ext) | 146:37 | 146:20 | 70 ± 20% | 455 |
| 7LC-252203NO | 180 + 5(ext) | 146:37 | 146:3 | 70 ± 20% | 455 |
| 7LC-352142NO | 180 + 5(ext) | 146:52 | 146:20 | 70 ± 20% | 455 |
| 7LC-352203NO | 180 + 5(ext) | 146:52 | 146:3 | 70 ± 20% | 455 |
| 7LC-352353NO | 180 + 5(ext) | 146:52 | 146:5 | 70 ± 20% | 455 |
| 7LC-352503NO | 180 + 5(ext) | 146:52 | 146:7 | 70 ± 20% | 455 |
| 7LC-352713NO | 180 + 5(ext) | 146:52 | 146:10 | 70 ± 20% | 455 |
| 7LC-452503NO | 180 + 5(ext) | 146:66 | 146:7 | 70 ± 20% | 455 |
| 7MC-162503NO | 180 + 5(ext) | 146:23 | 146:7 | 110 ± 20% | 455 |
| 7MC-202503NO | 180 + 5(ext) | 146:29 | 146:7 | 110 ± 20% | 455 |
| 7MC-222162NO | 180 + 5(ext) | 146:33 | 146:23 | 110 ± 20% | 455 |
| 7MC-312162NO | 180 + 5(ext) | 146:46 | 146:23 | 110 ± 20% | 455 |
| 7MC-402353NO | 180 + 5(ext) | 146:58 | 146:5 | 110 ± 20% | 455 |
| 7MC-402503NO | 180 + 5(ext) | 146:58 | 146:7 | 110 ± 20% | 455 |
| 7MC-402563NO | 180 + 5(ext) | 146:58 | 146:8 | 110 ± 20% | 455 |
| 7MC-452252NO | 180 + 5(ext) | 146:66 | 146:37 | 110 ± 20% | 455 |
| 7MC-502503NO | 180 + 5(ext) | 146:73 | 146:7 | 110 ± 20% | 455 |

## 7mm TYPE 7PH High Frequency
## 7mm TYPE 7PH High Frequency With Internal Capacitor (1)

***Frequency Range:*** 2MHz-20MHz
***Inductance Range:*** 1-82μH
***Temperature Coefficient:*** Of Inductor TC(L) 220 ± 220ppm/°C
With Internal Capacitor TC(F) 0 ± 250ppm/°C
***Internal Capacitance Values:*** 5-100pF (1)

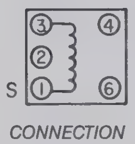




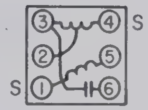
*Tuning Method*
*Tuning Tool:*
*Standard Blade (–)*

### *Quality Features:*

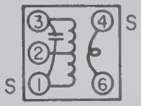
- Ideal for use in FM circuits, as in IFT coil, and in oscillator circuits because of high Q and wide inductance range.
- Impedance matching between circuits is faster and easier because the Q is exceptionally steady throughout the tuning range when aligning.
- Unique design features a cup core adjustor threaded directly into the shield, allowing the use of larger cores. This produces the superior, large signal characteristics normally associated with 10mm types. The design improves stability and also allows the use of larger cores which greatly improves saturation levels.
- The coil form is wax-impregnated to form a moisture barrier against corrosion and to prevent microphonics (howling).
- Optimum final tuning, due to the large specified percentage adjustment range.
- Plated brass can, to provide static and magnetic shielding. Cup core provides additional magnetic shielding, assuring low EMI.
- Presoldered terminal pins ensure a highly reliable PCB connection.
- Base is thick, high-temperature UL 94V-1 grade phenol to protect coil during wave soldering.



CONNECTION
Z



CONNECTION
LO



CONNECTION
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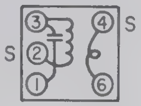


CONNECTION
MO

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

1. Available with internal ceramic capacitors: The standard increments shown on Page 4 (from 5-100pF).
2. This device comes with 6 terminals to accommodate a transformer winding and/or tap.
3. Presoldered ground tabs available.
4. Tuning tool can be a blade (–) screwdriver.
5. For Radio Detector Primary
6. For Radio Detector Secondary

### *TYPE 7PH High Frequency*

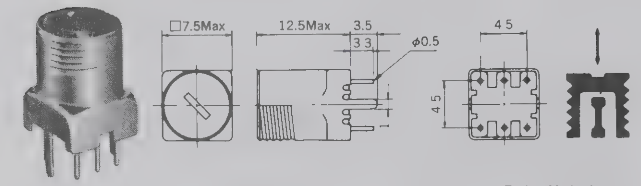
| TOKO Part Number | Inductance Range (μH) | Q (min.) | Test Freq. (MHz) | Color Code |
|---|---|---|---|---|
| A119ANS-T1029Z | 4.7 ± 10% | 80 | 7.96 | BLACK |
| A119ANS-T1030Z | 5.6 ± 10% | 80 | 7.96 | BLACK |
| A119ANS-T1031Z | 6.8 ± 10% | 80 | 7.96 | BLACK |
| A119ANS-T1032Z | 8.2 ± 10% | 80 | 7.96 | BLACK |
| A119ANS-T1033Z | 10.0 ± 10% | 80 | 2.52 | BLACK |
| A119ANS-T1034Z | 12.0 ± 10% | 80 | 2.52 | BLACK |
| A119ANS-T1035Z | 15.0 ± 10% | 80 | 2.52 | BLACK |
| A119ANS-T1036Z | 18.0 ± 10% | 80 | 2.52 | BLACK |
| A119ANS-T1037Z | 22.0 ± 10% | 80 | 2.52 | BLACK |
| A119ANS-T1038Z | 27.0 ± 10% | 80 | 2.52 | BLACK |
| A119ANS-T1039Z | 33.0 ± 10% | 80 | 2.52 | BLACK |
| A119ANS-T1040Z | 39.0 ± 10% | 80 | 2.52 | BLACK |
| A119ANS-T1041Z | 47.0 ± 10% | 80 | 2.52 | BLACK |
| A119ANS-T1042Z | 56.0 ± 10% | 80 | 2.52 | BLACK |
| A119ANS-T1043Z | 68.0 ± 10% | 80 | 2.52 | BLACK |
| A119ANS-T1044Z | 82.0 ± 10% | 80 | 2.52 | BLACK |

### *TYPE 7PH High Freq. with Internal Capacitor*

| TOKO Part Number | Turns Ratio: 1-3/2-3 | 1-3/4-6 | Others | Tuning Capacitance (pF) | Q (min.) | Test Freq. (MHz) |
|---|---|---|---|---|---|---|
| 119AC-470033NO | 14:3 | 14:3 | | 47 + 5(ext) | 100 ± 20% | 10.7 |
| 119AC-470052NO | 14:5 | 14:2 | | 47 + 5(ext) | 110 ± 20% | 10.7 |
| 119AC-470072NO | 14:7 | 14:2 | | 47 + 5(ext) | 110 ± 20% | 10.7 |
| 119AC-470073NO | 14:7 | 14:3 | | 47 + 5(ext) | 110 ± 20% | 10.7 |
| 119AC-470084LO[5] | | | | 47 + 3(ext) | 90 ± 20% | 10.7 |
| 119AC-470112NO | 14:11 | 14:2 | | 47 + 5(ext) | 120 ± 20% | 10.7 |
| 119AC-750111MO | | | 2-3/4-6 11:1 | 75 + 5(ext) | 100 ± 20% | 10.7 |
| 119AC-750112MO | | | 2-3/4-6 11:2 | 75 + 5(ext) | 100 ± 20% | 10.7 |
| 119FC-560061NO[6] | 12:6 | 12:1 | | 56 + 0(ext) | 120 ± 20% | 10.7 |
| 119FC-820051NO[6] | 10:5 | 10:1 | | 82 + 0(ext) | 110 ± 20% | 10.7 |
| 119LC-470033NO | 14:3 | 14:3 | | 47 + 5(ext) | 65 ± 20% | 10.7 |
| 119LC-470053NO | 14:5 | 14:3 | | 47 + 5(ext) | 70 ± 20% | 10.7 |
| 119LC-470073NO | 14:7 | 14:3 | | 47 + 5(ext) | 70 ± 20% | 10.7 |

## 7mm TYPE 7PA

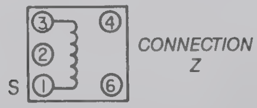
***Frequency Range:*** 10kHz-200kHz
***Inductance Range:*** 500µH-25mH
***Temperature Coefficient:*** 250ppm/°C max



*Tuning Method*
*Tuning Tool: Standard Blade (–) Screwdriver.*
*For Both 7PA & 7PE*

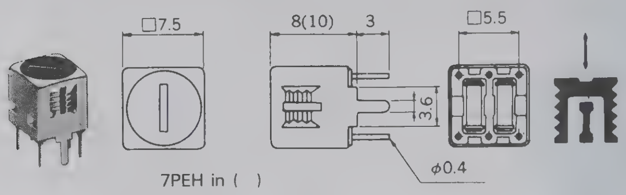
### *Quality Features:*

- Designed for lower frequencies and for use in RF and oscillator coil applications, where a high saturation level becomes useful in achieving an extended dynamic range.
- Unique design features a cup core adjustor threaded directly into the shield, allowing the use of larger cores. This produces superior, large signal characteristics normally associated with larger inductors. The design also allows the use of larger cores which greatly improves saturation levels. The base has also been made more accessible for prototyping.
- Outstanding stability, both mechanically and electrically.
- The coil form is wax impregnated to form a moisture barrier against corrosion, and to prevent microphonics (howling).
- Stand-offs keep the coil straight during wave soldering.
- Optimum final tuning, due to the large specified percentage adjustment range.
- Plated brass can, to provide static and magnetic shielding. Cup core provides additional magnetic shielding, assuring low EMI.
- Presoldered terminal pins ensure a highly reliable PCB connection.
- Base is thick, high-temperature UL 94V-1 grade phenol to protect coil during wave soldering.



## 7mm TYPE 7PE

***Frequency Range:*** 10kHz-300kHz
***Inductance Range:*** 500µH-80mH
***Temperature Coefficient:*** Of Inductor TC(L) 750 ± 500ppm/°C
With Internal Capacitor TC(F) 0 ± 250ppm/°C
***Optional Internal Capacitance Values:*** 10-4700pF (1)



### *Quality Features:*

- For signal processing in frequency ranges less than 300kHz. Replaces ABS-07 where space is concerned (only 9mm high).
- Ideal for use in amplifier circuits. A unique core material is used to yield low distortion levels.
- Ideal for use in the filtering circuits of many audio amplifier applications. Up to two internal capacitors can be fitted per device, and up to three devices can be ganged together.
- Unique design features a cup core adjustor threaded directly into the shield, allowing the use of larger cores. This improves stability and allows the use of a larger core which greatly improves inductance and tuning range.
- Central stand-offs facilitate flux cleaning.
- Optimum final tuning, due to the large specified percentage adjustment range.
- Plated brass can, to provide static and magnetic shielding. Cup core provides additional magnetic shielding, assuring low EMI.
- Presoldered terminal pins ensure a highly reliable PCB connection.
- Base is thick, high-temperature UL 94V-1 grade phenol to protect coil during wave soldering.

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

1. The 7PE coil is available with the following internal capacitors: The standard increments shown on Page 4 (from 10-4700pF)
2. This device comes with 6 terminals to accommodate transformer winding and/or tap.
3. Presoldered ground tabs available.

### *TYPE 7PA*

| TOKO Part Number | Variable Inductance Range (mH) | Q (min.) | Frequency (MHz) |
|---|---|---|---|
| 126ANS-T1094Z | 1.0 ± 10% | 60 | 252 kHz |
| 126ANS-T1095Z | 1.2 ± 10% | 60 | 252 kHz |
| 126ANS-T1096Z | 1.5 + 10% | 60 | 252 kHz |
| 126ANS-T1097Z | 1.8 ± 10% | 60 | 252 kHz |
| 126ANS-T1098Z | 2.2 ± 10% | 60 | 252 kHz |
| 126ANS-T1099Z | 2.7 ± 10% | 60 | 252 kHz |
| 126ANS-T1100Z | 3.3 ± 10% | 60 | 252 kHz |
| 126ANS-T1101Z | 3.9 ± 10% | 60 | 252 kHz |
| 126ANS-T1102Z | 4.7 ± 10% | 60 | 252 kHz |
| 126ANS-T1103Z | 5.6 ± 10% | 60 | 252 kHz |
| 126ANS-T1104Z | 6.8 ± 10% | 60 | 252 kHz |

### *TYPE 7PA (cont.)*

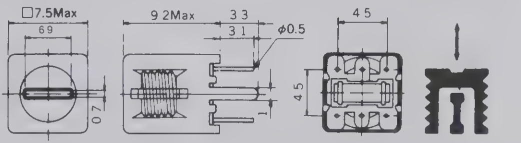
| TOKO Part Number | Variable Inductance Range (mH) | Q (min.) | Frequency (MHz) |
|---|---|---|---|
| 126ANS-T1105Z | 8.2 ± 10% | 60 | 252 kHz |
| 126ANS-T1106Z | 10.0 ± 10% | 60 | 79.6 kHz |
| 126ANS-T1107Z | 12.0 ± 10% | 60 | 79.6 kHz |
| 126ANS-T1108Z | 15.0 ± 10% | 60 | 79.6 kHz |
| 126ANS-T1109Z | 18.0 ± 10% | 60 | 79.6 kHz |
| 126ANS-T1110Z | 22.0 ± 10% | 60 | 79.6 kHz |

### *TYPE 7PE*

| TOKO Part Number | Cutoff Freq. (kHz) | 1st Pole Freq. (kHz) | 2nd Pole Freq. (kHz) | Input Impedance (Ohms) | Output Impedance (Ohms) |
|---|---|---|---|---|---|
| 7PEHS-1104 | 10 | 19 | 38 | 2400 | 5600 |

## 7mm TYPE 7PL

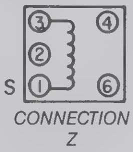
***Frequency Range:*** 7PL - 200kHz-2MHz
7PL High Frequency - 2MHz-20MHz
***Inductance Range:*** 7PL - 20μH-500μH
7PL High Frequency - 1μH-100μH
***Temperature Coefficient:*** Of Inductor TC(L) 220 ± 100ppm/°C
218 ANS - High Frequency - T/N's
L7BRS - 150 ± 100ppm/°C Low Freq.
With Internal Capacitor TC(F) 0 ± 250ppm/°C
***Optional Internal Capacitance Value:*** 7PL 150-390pF (1)
7PL High Frequency 5-100pF (2)



*Tuning Method*
*Tuning Tool: Standard Blade (–) Screwdriver.*

## *Quality Features:*

- Exceptionally low profile, only 9.2mm. Ideal for tight spaces.
- The 7PL is ideal for use in AM circuits; the 7PL High Frequency is ideal for use in FM circuits. Both are ideal for use as an IFT coil, and in oscillator circuits due to the high Q (typically 70) and wide inductance range. The Q value is exceptionally steady throughout the tuning range (alignment) to make impedance matching between circuits faster and easier.
- Unique design features a cup core adjustor threaded directly into the shield, allowing the use of larger cores. This produces superior, large signal characteristics normally associated with larger inductors. The design also allows the use of a larger bobbin which greatly improves saturation levels. The bobbin has also been made more accessible for prototyping.
- Outstanding stability, both mechanically and electrically.
- The coil form is wax impregnated to form a moisture barrier against corrosion and to prevent microphonics (howling).
- Stand-offs on all four corners keep the coil straight during wave soldering.
- Optimum final tuning, due to the large specified percentage adjustment range.
- Plated brass can, to provide static and magnetic shielding. Cup core provides additional magnetic shielding, assuring low EMI.
- Presoldered terminal pins ensure a highly reliable PCB connection.
- Base is thick high temperature UL 94V-1 grade phenol to protect coil during wave soldering.



*CONNECTION*
*Z*

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

1. The 7PL coil is available with the following internal ceramic capacitors: The standard increments shown on Page 4 (from 150 to 390pF).
2. The 7PL High Frequency coil is available with the following internal ceramic capacitors: The standard increments shown on Page 4 (from 5-100pf).
3. This device comes with 6 terminals to accommodate transformer winding and/or tap.
4. Presoldered ground tabs available.

### *TYPE 7PL*

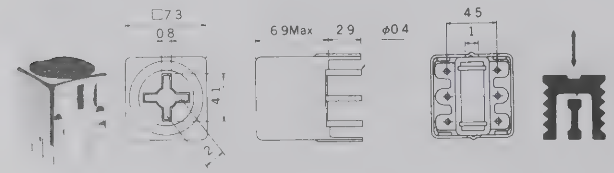
| TOKO Part Number | Tuning Range (μH) | Q (min.) | Test Frequency |
|---|---|---|---|
| L7BRS-1764Z | 56 ± 5% | 40 | 2.52MHz |
| L7BRS-1765Z | 100 ± 5% | 73 | 796kHz |
| L7BRS-1766Z | 150 ± 5% | 81 | 796kHz |
| L7BRS-1767Z | 220 ± 5% | 80 | 796kHz |
| L7BRS-1768Z | 270 ± 5% | 82 | 796kHz |
| L7BRS-1769Z | 330 ± 5% | 82 | 796kHz |
| L7BRS-1770Z | 390 ± 5% | 78 | 796kHz |

### *TYPE 7PL High Frequency*

| TOKO Part Number | Tuning Range (μH) | Q (min.) | Test Frequency |
|---|---|---|---|
| 218ANS-1083Z | 2 ± 4% | 72 | 7.96MHz |
| 218ANS-1084Z | 3.3 ± 4% | 69 | 7.96MHz |
| 218ANS-1085Z | 4.7 ± 4% | 70 | 7.96MHz |
| 218ANS-1086Z | 6.8 ± 4% | 73 | 7.96MHz |
| 218ANS-1087Z | 10 ± 4% | 69 | 2.52MHz |
| 218ANS-1088Z | 15 ± 4% | 70 | 2.52MHz |
| 218ANS-1089Z | 18 ± 4% | 70 | 2.52MHz |

## 7mm TYPE 7PS

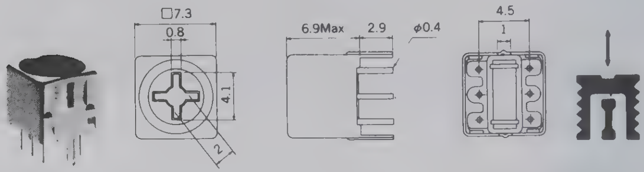
***Frequency Range:*** 200kHz-1.5MHz
***Inductance Range:*** 10μH-700μH
***Temperature Coefficient:*** Of Inductor TC(L) 220 ± 220ppm/°C
and TC(L) 600 ± 500ppm/°C
With Internal Capacitor TC(F) 0 ± 250ppm/°C
***Optional Internal Capacitance Values:*** 150-390pF (1)



*Tuning Method*
*Tuning Tool: Blade*
(−) or Phillips (+)
Screwdriver

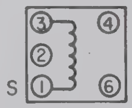
## 7mm TYPE 7PS High Frequency

***Frequency Range:*** 2MHz-15MHz
***Inductance Range:*** 1μH-35μH
***Temperature Coefficient:*** Of Inductor TC(L) 330 ± 220ppm/°C
With Internal Capacitor TC(F) 0 ± 250ppm/°C
***Optional Internal Capacitance Values:*** 5-100pF (2)

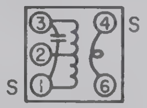


### *Quality Features:*

- Exceptionally low profile for a 7mm coil - only 6.9mm max.
- TYPE 7PS for AM circuit applications and 7PS High Frequency for FM circuit applications are ideal for use as IFT coils and in oscillator circuits due to their high Q (typically 90) and wide inductance range. The Q value is very steady throughout the tuning range (alignment) to make matching between circuits faster and easier.
- Unique design features a cup core adjustor threaded directly into the shield, allowing the use of larger cores. This produces superior large signal characteristics normally associated with larger inductors. The design also allows the use of a larger bobbin which greatly improves saturation levels. The bobbin has also been made more accessible for prototyping.
- The coil form is wax impregnated to form a moisture barrier against corrosion and to prevent microphonics (howling).
- Stand-offs on all four corners keep the coil straight during wave soldering.
- Optimum final tuning, due to the large specified percentage adjustment range.
- Plated brass can, to provide static and magnetic shielding. Cup core provides additional magnetic shielding, assuring low EMI.
- Presoldered terminal pins ensure a highly reliable PCB connection.
- Base is thick, high-temperature UL 94V-1 grade phenol to protect coil during wave soldering.



*CONNECTION*
*Z*



*CONNECTION*
*N*

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

1. The 7PS coil is available with the following internal ceramic capacitors: The standard increments shown on Page 4 (from 150 to 390pF)
2. The 7PS High Frequency coil is available with the following internal ceramic capacitors: The standard increments shown on Page 4 (from 5-100pF).
3. This device comes with 6 terminal to accommodate transformer winding and/or tap.
4. Presoldered ground tabs available.

### *TYPE 7PS with Internal Capacitor*

| TOKO Part Number | Tuning Capacitor (pF) | Turns Ratio 1-2: 2-3: 4-6 | Q (min.) | Test Freq. (kHz) |
|---|---|---|---|---|
| 7PSMC-1479N = S | 180 ± 10 (ext) | 105/35/3 | 60 | 450 |
| 7PSMC-1571N = S | 180 ± 5 (ext) | 71/71/14 | 60 | 450 |
| 7PSMC-1570N = S | 180 ± 10 (ext) | 45/95/18 | 60 | 450 |

### *TYPE 7PS without Internal Capacitor*

| TOKO Part Number | Inductance (μH) | Q (min.) | Test Freq. (kHz) |
|---|---|---|---|
| 7PSLN-1634 = S | 94 | 60 | 796 |
| 7PSLN-1635 = S | 105 | 55 | 796 |

### *TYPE 7PS High Freq. with Internal Capacitor*

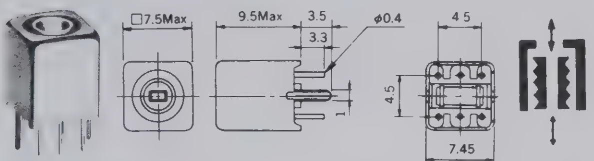
| TOKO Part Number | Tuning Capacitor (pF) | Turns Ratio 1-2: 2-3: 4-6 | Q (min.) | Test Freq. (MHz) |
|---|---|---|---|---|
| 392BC-1496N = S | 47 | 7/7/2 | 50 | 10.7 |

### *TYPE 7PS High Freq. without Internal Capacitor*

| TOKO Part Number | Inductance (μH) | Q (min.) | Test Freq. (MHz) |
|---|---|---|---|
| 392AN-1647Z = S | 1.8 | 65 | 7.96 |
| 392BN-1648Z = S | 2.07 | 65 | 7.96 |

## 7mm TYPE 7KL

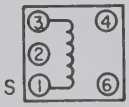
***Frequency Range:*** 2MHz-120MHz
***Inductance Range:*** .1μH-50μH
***Temperature Coefficient:*** Of Inductor TC(L) 220 ± 220ppm/°C
With Internal Capacitor TC(F) 0 ± 250ppm/°C
***Internal Capacitance Values:*** 5-100pF (1)



*Tuning Method*
*Tuning Tool: #71-1471*
*or #71-0632*

## *Quality Features:*

- Type 7KL is a low profile version (only 9.5mm high max).
- Ideal as a voltage control oscillation coil and as a quadrature detector coils because of stable impedance in each winding.
- Excellent for matching to crystal or ceramic filters saving you design time and assuring component comptatibility. See Note 2.
- Spiral wound with high number of closely spaced slots on form render low distributed capacitance, low temperature coefficient, and added stability in humid conditions.
- The Q value is high, (typically 70) and exceptionally steady throughout the tuning range (alignment) to make impedance matching between circuits faster and easier.
- Center frequency spec is duplicated more precisely due to the coil having 5 vertical slots (other manufacturers have 2 or none) to bring windings down to terminals. This assures consistent and precise center frequency, Q and inductance.
- Integral molded base and coil form provide outstanding resistance to shock, vibration and humidity.
- The polycarbonate coil form has a splined body design which precisely matches the tuning slug for excellent torque control (torque range is guaranteed). This reduces problem of core breakage during trimming and once aligned in the circuit, the setting is locked in throughout the manufacturing process. In extremely demanding applications, this precision eliminates the need and expense of locking screws.
- Optimum final tuning, due to the large specified percentage adjustment range.
- Plated brass can, to provide static and magnetic shielding. Pot core provides additional magnetic shielding, assuring low EMI.



CONNECTION
Z

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

1. The 7KL coil is available with the following optional internal ceramic capacitors: The standard increments shown on Page 4 (from 5 to 100pF).
2. This device comes with 6 terminals to accommodate transformer winding and/or tap.
3. The polycarbonate base should be exposed to minimal heat during soldering.
4. Freon cleaning solvent suggested. Contact TOKO for other approved cleaning solvents.
5. Presoldered ground tabs available.

### *TYPE 7KL*

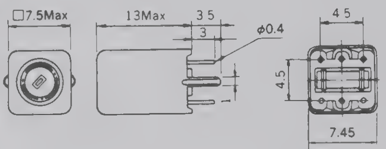
| TOKO Part Number | Inductance Range (μH) | Q (min.) | Test Frequency (MHz) |
|---|---|---|---|
| 291CNS-T1041Z | 0.1 ± 6% | 20 | 25.2 |
| 291CNS-T1042Z | 0.12 ± 6% | 20 | 25.2 |
| 291CNS-T1043Z | 0.15 ± 6% | 20 | 25.2 |
| 291CNS-T1044Z | 0.18 ± 6% | 20 | 25.2 |
| 291CNS-T1045Z | 0.22 ± 6% | 20 | 25.2 |
| 291CNS-T1046Z | 0.27 ± 6% | 20 | 25.2 |
| 291CNS-T1047Z | 0.33 ± 6% | 20 | 25.2 |
| 291CNS-T1048Z | 0.39 ± 6% | 20 | 25.2 |
| 291CNS-T1049Z | 0.47 ± 6% | 20 | 25.2 |
| 291CNS-T1050Z | 0.56 ± 6% | 20 | 25.2 |
| 291CNS-T1051Z | 0.68 ± 6% | 20 | 25.2 |
| 291CNS-T1052Z | 0.82 ± 6% | 20 | 25.2 |
| 291CNS-T1053Z | 1.0 ± 6% | 20 | 7.96 |
| 291CNS-T1054Z | 1.2 ± 6% | 20 | 7.96 |
| 291CNS-T1055Z | 1.5 ± 6% | 20 | 7.96 |
| 291CNS-T1056Z | 1.8 ± 6% | 20 | 7.96 |
| 291CNS-T1057Z | 2.2 ± 6% | 20 | 7.96 |

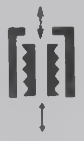
### *TYPE 7KL (cont.)*

| TOKO Part Number | Inductance Range (μH) | Q (min.) | Test Frequency (MHz) |
|---|---|---|---|
| 291CNS-T1058Z | 2.7 ± 6% | 20 | 7.96 |
| 291CNS-T1059Z | 3.3 ± 6% | 20 | 7.96 |
| 291CNS-T1060Z | 3.9 ± 6% | 20 | 7.96 |
| 291CNS-T1061Z | 4.7 ± 6% | 20 | 7.96 |
| 291CNS-T1062Z | 5.6 ± 6% | 20 | 7.96 |
| 291CNS-T1063Z | 6.8 ± 6% | 20 | 7.96 |
| 291CNS-T1064Z | 8.2 ± 6% | 20 | 7.96 |
| F291CNS-T1065Z | 10.0 ± 6% | 20 | 2.52 |
| F291CNS-T1066Z | 12.0 ± 6% | 20 | 2.52 |
| F291CNS-T1067Z | 15.0 ± 6% | 20 | 2.52 |
| F291CNS-T1068Z | 18.0 ± 6% | 20 | 2.52 |
| F291CNS-T1069Z | 22.0 ± 6% | 20 | 2.52 |
| F291CNS-T1070Z | 27.0 ± 6% | 20 | 2.52 |
| F291CNS-T1071Z | 33.0 ± 6% | 20 | 2.52 |
| F291CNS-T1072Z | 39.0 ± 6% | 20 | 2.52 |
| F291CNS-T1073Z | 47.0 ± 6% | 20 | 2.52 |

## 7mm TYPE 7KMM

***Frequency Range:*** 2MHz-120MHz
***Inductance Range:*** .1μH-82μH
***Temperature Coefficient:*** Of Inductor TC(L) 220 ± 220ppm/°C
With Internal Capacitor TC(F) 0 ± 250ppm/°C
***Optional Internal Capacitance Values:*** 5-100pF (1)

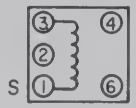




*Tuning Method*
*Tuning Tool: #71-1471 or 71-0632*

## *Quality Features:*

- Ideal as a voltage control oscillation coil, and because the tank circuit and inductor circuits (phase shifting) are on the same form, matching is easily achieved. This design decisively outperforms other alternatives when used as a quadrature detector coil.
- Easily matches most types of ceramic and crystal filters due to the stable impedance in each winding. Saves you design time and assures compatibility of components.
- Spiral wound with high number of closely spaced slots on form render low distributed capacitance, low temperature coefficient and added stability in humid conditions.
- Large capacity bobbin for higher inductance requirements.
- The Q value is high, (typically 70) and very steady throughout the tuning range (alignment) to make impedance matching between circuits faster and easier.
- Center frequency spec is duplicated more precisely because the coil form has 8 vertical slots (other manufacturers have 2 or none) to bring windings down to terminals. This assures consistent and precise center frequency, Q and inductance.
- The TPX coil form has a splined body design which precisely matches the tuning slug for excellent torque control (torque range is guaranteed). This reduces problem of core breakage during trimming and once aligned in the circuit, the setting is locked in throughout the manufacturing process. In extremely demanding applications, this precision eliminates the need and expense of locking screws.
- Optimum final tuning, due to the large specified percentage adjustment range.
- Plated brass can, to provide static and magnetic shielding. Ferrite pot core provides additional magnetic shielding, assuring low EMI.



*CONNECTION Z*

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

1. Available with internal ceramic capacitors: The standard increments shown on Page 4 (from 5 to 100pF).
2. This device comes with 6 terminals to accommodate transformer winding and/or tap.
3. Freon cleaning solvent suggested. Contact TOKO for other approved cleaning solvents.
4. Presoldered ground tabs available.

### *TYPE 7KMM*

| TOKO Part Number | Inductance Range (μH) | Q (min.) | Test Frequency (MHz) |
|---|---|---|---|
| 292KNAS-T1028Z | 0.10 ± 6% | 35 | 50.0 |
| 292KNAS-T1029Z | 0.12 ± 6% | 35 | 50.0 |
| 292KNAS-T1030Z | 0.15 ± 6% | 35 | 50.0 |
| 292KNAS-T1031Z | 0.18 ± 6% | 35 | 50.0 |
| 292KNAS-T1032Z | 0.22 ± 6% | 50 | 50.0 |
| 292KNAS-T1033Z | 0.27 ± 6% | 50 | 50.0 |
| 292KNAS-T1034Z | 0.33 ± 6% | 50 | 50.0 |
| 292KNAS-T1035Z | 0.39 ± 6% | 50 | 50.0 |
| 292KNAS-T1036Z | 0.47 ± 6% | 50 | 50.0 |
| 292KNAS-T1037Z | 0.56 ± 6% | 50 | 50.0 |
| 292KNAS-T1038Z | 0.68 ± 6% | 50 | 50.0 |
| 292KNAS-T1039Z | 0.82 ± 6% | 50 | 50.0 |
| 292CNS-T1040Z | 1.0 ± 6% | 40 | 7.96 |
| 292CNS-T1041Z | 1.2 ± 6% | 40 | 7.96 |
| 292CNS-T1042Z | 1.5 ± 6% | 40 | 7.96 |
| 292CNS-T1043Z | 1.8 ± 6% | 40 | 7.96 |
| 292CNS-T1044Z | 2.2 ± 6% | 40 | 7.96 |
| 292CNS-T1045Z | 2.7 ± 6% | 40 | 7.96 |

### *TYPE 7KMM (cont.)*

| TOKO Part Number | Inductance Range (μH) | Q (min.) | Test Frequency MHz |
|---|---|---|---|
| 292CNS-T1046Z | 3.3 ± 6% | 40 | 7.96 |
| 292CNS-T1047Z | 3.9 ± 6% | 40 | 7.96 |
| 292CNS-T1048Z | 4.7 ± 6% | 40 | 7.96 |
| 292CNS-T1049Z | 5.6 ± 6% | 40 | 7.96 |
| 292CNS-T1050Z | 6.8 ± 6% | 40 | 7.96 |
| 292CNS-T1051Z | 8.2 ± 6% | 40 | 7.96 |
| F292CNS-T1052Z | 10.0 ± 6% | 35 | 2.52 |
| F292CNS-T1053Z | 12.0 ± 6% | 35 | 2.52 |
| F292CNS-T1054Z | 15.0 ± 6% | 35 | 2.52 |
| F292CNS-T1055Z | 18.0 ± 6% | 35 | 2.52 |
| F292CNS-T1056Z | 22.0 ± 6% | 35 | 2.52 |
| F292CNS-T1057Z | 27.0 ± 6% | 35 | 2.52 |
| F292CNS-T1058Z | 33.0 ± 6% | 35 | 2.52 |
| F292CNS-T1059Z | 39.0 ± 6% | 35 | 2.52 |
| F292CNS-T1060Z | 47.0 ± 6% | 35 | 2.52 |
| F292CNS-T1061Z | 56.0 ± 6% | 35 | 2.52 |
| F292CNS-T1062Z | 68.0 ± 6% | 35 | 2.52 |
| F292CNS-T1063Z | 82.0 ± 6% | 35 | 2.52 |

*continued on next page*

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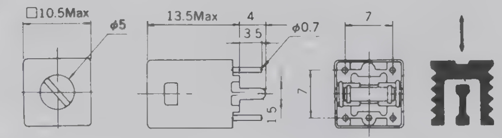
### *TYPE 7KMM High Frequency*[1]

| TOKO Part Number | Inductance Range (μH) | Q (min.) | Test Freq. (MHz) |
|---|---|---|---|
| 292SNS-T1365Z | 0.08 ± 2% | 50 | 80.0 |
| 292SNS-T1366Z | 0.10 ± 6% | 50 | 80.00 |
| 292SNS-T1367Z | 0.15 ± 6% | 60 | 80.00 |
| 292SNS-T1368Z | 0.22 ± 6% | 60 | 80.00 |
| 292SNS-T1369Z | 0.33 ± 6% | 60 | 80.00 |
| 292SNS-T1370Z | 0.47 ± 6% | 60 | 50.00 |
| 292SNS-T1371Z | 0.68 ± 6% | 60 | 50.00 |
| 292KNS-T1372Z | 1.00 ± 6% | 40 | 7.96 |
| 292KNS-T1373Z | 1.50 ± 6% | 40 | 7.96 |
| 292KNS-T1374Z | 2.20 ± 6% | 40 | 7.96 |
| 292KNS-T1375Z | 3.30 ± 6% | 40 | 7.96 |
| 292KNS-T1376Z | 4.70 ± 6% | 40 | 7.96 |
| 292KNS-T1377Z | 6.80 ± 6% | 40 | 7.96 |
| 292KNS-T1378Z | 10.00 ± 6% | 40 | 7.96 |

[1] Recommended for use with Motorola linear IC's.

## 10mm TYPE 10EZ

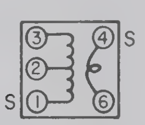
***Frequency Range:*** 200kHz-2MHz
***Inductance Range:*** 1μH-2mH
***Temperature Coefficient:*** Of Inductor TC(L) 220 ± 220ppm/°C
and TC(L) 750 ± 500ppm/°C
***For Optional Internal Capacitor Feature, See Page 15.***



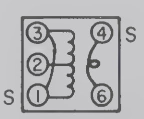
*Tuning Method*
*Tuning Tool: # 71-0490*

## *Quality Features:*

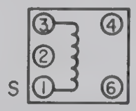
- Most cost effective and widely used coil in the world for AM, and IF bands (200kHz to 2MHz).
- Good mechanical protection because central ferrite drum has surrounding cup core held in place by threaded internal plastic collar. Collar fits tightly against metallic electrostatic shield that has exclusive ribbed support windows to produce constant down pressure on the plastic support, preventing microphonics (howling) and increasing stability.
- Extremely smooth tuning torque for precise adjustment.
- Large drum core for greater range of inductances.
- Optimum final tuning, due to the large specified percentage adjustment range.
- Plated brass can, to provide static and magnetic shielding. Cup core provides additional magnetic shielding, assuring low EMI.
- Presoldered terminal pins ensure a highly reliable PCB connection.
- Stand-offs on base to keep coil straight during wave soldering and facilitate flux cleaning.
- Base is thick high temperature UL 94V-1 grade phenol to protect coil during wave soldering.
- Automatic instertion packaging available.



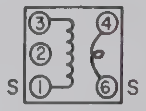
*CONNECTION*
*EK*



*CONNECTION*
*N, NO, NZ*



*CONNECTION*
*Z*



*CONNECTION*
*BM*

## STANDARD DEVICES SELECTION GUIDE

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1. This device has 6 terminals for transformer winding and/or tap.
2. Presoldered ground tabs available.

### *TYPE 10EZ*

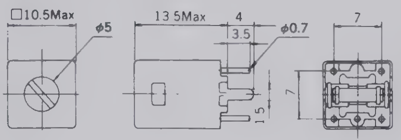
| TOKO Part Number | Inductance Range (μH) | Turns Ratio: 1-3/2-3 | Turns Ratio: 1-3/4-6 | Q (min.) | Test Freq. (kHz) |
|---|---|---|---|---|---|
| RAN-10A6729EK | 630 ± 10% | 154:125 | 154:4 | 95 ± 20% | 200 |
| RAN-10A6845EK | 630 ± 10% | 154:145 | 154:4 | 95 ± 20% | 200 |
| RUNS-T1027Z | 1000 ± 10% | | | 50 | 252 |
| RUNS-T1028Z | 1200 ± 10% | | | 50 | 252 |
| RUNS-T1029Z | 1500 ± 10% | | | 50 | 252 |
| RUNS-T1030Z | 1800 ± 10% | | | 50 | 252 |
| RWO-6A5105BM | 360 ± 6% | | 98:28 | 80 | 796 |
| RWO-6A6255N | 270 ± 6% | 85:82 | 85:8 | 65(@1.4MHz) | 796 |
| RWR-151208NO | 150 ± 6% | 65:63 | 65:8 | 90(@1.4MHz) | 796 |
| RWR-151308NO | 150 ± 6% | 65:62 | 65:8 | 90(@1.4MHz) | 796 |
| RWR-271208NO | 270 ± 6% | 85:83 | 84:8 | 60(@1.4MHz) | 796 |
| RWR-271308NO | 270 ± 6% | 85:82 | 85:8 | 80(@1.4MHz) | 796 |
| RWR-331208NO | 330 ± 6% | 94:92 | 94:2 | 70(@1.4MHz) | 796 |
| RWR-331308NO | 330 ± 6% | 94:91 | 94:8 | 70(@1.4MHz) | 796 |

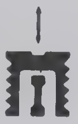
### *TYPE 10EZ (cont.)*

| TOKO Part Number | Inductance Range (μH) | Turns Ratio: 1-3/2-3 | Turns Ratio: 1-3/4-6 | Q (min.) | Test Freq. (kHz) |
|---|---|---|---|---|---|
| RBR-361308NZ | 360 ± 6% | 98:96 | 98:8 | 80(@1.4MHz) | 796 |
| RWR-361412NZ | 360 ± 6% | 100:96 | 100:12 | 50(@1.4MHz) | 796 |
| RWRS-T1015Z | 100 ± 10% | | | 100 | 796 |
| RWRS-T1016Z | 120 ± 10% | | | 100 | 796 |
| RWRS-T1017Z | 150 ± 10% | | | 100 | 796 |
| RWRS-T1018Z | 180 ± 10% | | | 100 | 796 |
| RWRS-T1019Z | 220 ± 10% | | | 100 | 796 |
| RWRS-T1020Z | 270 ± 10% | | | 100 | 796 |
| RWRS-T1021Z | 330 ± 10% | | | 100 | 796 |
| RWRS-T1022Z | 390 ± 10% | | | 100 | 796 |
| RWRS-T1023Z | 470 ± 10% | | | 100 | 796 |
| RWRS-T1024Z | 560 ± 10% | | | 100 | 796 |
| RWRS-T1025Z | 680 ± 10% | | | 100 | 796 |
| RWRS-T1026Z | 820 ± 10% | | | 100 | 796 |

## 10mm TYPE 10EZ With Internal Capacitor

***Frequency Range:*** 200kHz-2MHz
***Inductance Range:*** 50μH-2mH
***Temperature Coefficient:*** 0 ±250ppm/°C
***Internal Capacitance Values:*** 5-100pF (1)

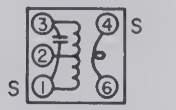




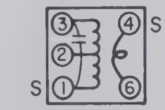
*Tuning Method*
*Tuning Tool: #71-0490*

## *Quality Features:*

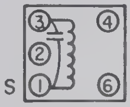
- Most economical and widely used coil in the world for AM and IF bands (200kHz to 2MHz). Minimal Q variation throughout tuning range. Makes impedance matching between circuits easy.
- Good mechanical protection and vibration resistance because central ferrite drum has surrounding cup core held in place by threaded internal plastic collar. Collar fits tightly against metallic electrostatic shield that has exclusive ribbed support windows to produce constant down pressure on the plastic support, preventing microphonics (howling) and increasing stability.
- Extremely smooth tuning torque for precise adjustment.
- Large drum core for greater range of inductances.
- The coil form is wax impregnated to form a moisture barrier against corrosion and to prevent microphonics (howling).
- Optimum final tuning, due to the large specified percentage adjustment range.
- Plated brass can, to provide static and magnetic shielding. Cup core provides additional magnetic shielding, assuring low EMI.
- Presoldered terminal pins ensure a highly reliable PCB connection.
- Stand-offs on base to keep coil straight during wave soldering and facilitate flux cleaning.
- Base is thick high-temperature UL 94V-1 grade phenol to protect coil during wave soldering.
- Automatic insertion packaging available.



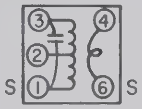
*CONNECTION*
*NO*



*CONNECTION*
*EK*



*CONNECTION*
*HM*



*CONNECTION*
*A*

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

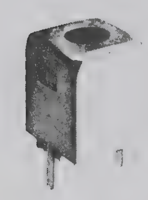
1. Available with internal capacitors: The standard increments shown on Page 4 (5-100pF) plus 180 and 390.
2. This device comes with 6 terminals to accommodate transformer winding and/or tap.
3. Presoldered ground tabs available.

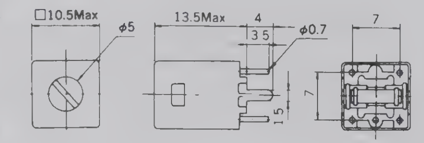
### *TYPE 10EZ*

| TOKO Part Number | Tuning Capacitance (pF) | Turns Ratio: 1-3/2-3 | 1-3/4-6 | Q (min.) | Test Freq. (kHz) | Color Code |
|---|---|---|---|---|---|---|
| RLC-252142NO | 180 + 10(ext) | 173:43 | 173:24 | 70 ± 20% | 455 | BLACK |
| RLC-352142NO | 180 + 10(ext) | 173:61 | 173:24 | 70 ± 20% | 455 | BLACK |
| RLC-352223NO | 180 + 5(ext) | 173:61 | 173:4 | 70 ± 20% | 455 | BLACK |
| RLC-352503NO | 180 + 10(ext) | 173:61 | 173:9 | 70 ± 20% | 455 | BLACK |
| RLC-352713NO | 180 + 10(ext) | 173:61 | 173:12 | 70 ± 20% | 455 | BLACK |
| RLC-452503NO | 180 + 10(ext) | 173:78 | 173:9 | 70 ± 20% | 455 | BLACK |
| RLC-4A5129EK | 180 + 10(ext) | 172:142 | 172:4 | 75 ± 20% | 455 | WHITE |
| RLC-4A5130N | 180 + 10(ext) | 172:30 | 172:4 | 75 ± 20% | 455 | YELLOW |
| RMC-14600A | 180 + 10(ext) | 165:86 | 165:9 | 110 ± 20% | 455 | YELLOW |
| RMC-14601A | 180 + 10(ext) | 165:66 | 165:9 | 110 ± 20% | 455 | WHITE |
| RMC-14602A | 180 + 10(ext) | 165:47 | 55:9 | 110 ± 20% | 455 | BLACK |
| RMC-15002A | 180 + 10(ext) | 165:74 | 165:42 | 110 ± 20% | 455 | BLACK |
| RMC-162453NO | 180 + 10(ext) | 164:26 | 164:7 | 110 ± 20% | 455 | BLACK |
| RMC-202202NO | 180 + 10(ext) | 164:33 | 164:33 | 110 ± 20% | 455 | BLACK |
| RMC-202313NO | 180 + 10(ext) | 164:33 | 164:5 | 110 ± 20% | 455 | BLACK |
| RMC-202503NO | 180 + 10(ext) | 164:33 | 41:2 | 110 ± 20% | 455 | BLACK |
| RMC-222162NO | 180 + 10(ext) | 164:37 | 82:13 | 110 ± 20% | 455 | BLACK |
| RMC-222633NO | 180 + 10(ext) | 164:37 | 82:5 | 110 ± 20% | 455 | BLACK |
| RMC-2A6597HM | 180 + 5(ext) | | | 120 ± 20% | 455 | BLACK |
| RMC-2A7287HM | 180 + 45(ext) | | | 110 ± 20% | 455 | BLACK |
| RMC-312162NO | 180 + 10(ext) | 164:52 | 164:26 | 110 ± 20% | 455 | BLACK |
| RMC-402353NO | 180 + 10(ext) | 164:66 | 164:6 | 110 ± 20% | 455 | BLACK |
| RMC-402503NO | 180 + 10(ext) | 164:66 | 164:8 | 110 ± 20% | 455 | BLACK |
| RMC-452252NO | 180 + 10(ext) | 164:74 | 164:41 | 110 ± 20% | 455 | BLACK |
| RMC-502182NO | 180 + 10(ext) | 164:82 | 164:30 | 110 ± 20% | 455 | BLACK |
| RMC-502503NO | 180 + 10(ext) | 164:82 | 164:8 | 110 ± 20% | 455 | BLACK |
| ROC-15000A | 180 + 10(ext) | 176:41 | 176:4 | 60 ± 20% | 455 | YELLOW |
| ROC-15001A | 180 + 10(ext) | 176:62 | 176:4 | 60 ± 20% | 455 | WHITE |
| RZC-1A5022N | 180 + 10(ext) | 142:71 | 142:36 | 150 ± 20% | 455 | BLACK |
| RZC-1A6425A | 180 + 5(ext) | 154:77 | 154:38 | 140 ± 20% | 455 | BLACK |

## 10mm TYPE 10EZ High Frequency

***Frequency Range:*** 2MHz-15MHz
***Inductance Range:*** 10μH-82μH
***Temperature Coefficient:*** Of Inductor TC(F) 0 ± 250ppm/°C
With Internal Capacitor TC(L) 220 ± 220ppm/°C
***Internal Capacitance Values:*** 5-100pF (1)

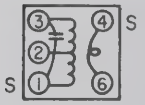




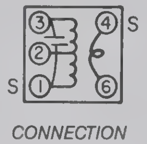
*Tuning Method*
*Tuning Tool: #71-0490*

## *Quality Features:*

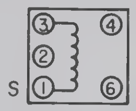
- Most economical and widely used coil in the world for AM and IF bands (2MHz to 15MHz). Minimal Q variation throughout tuning range. Makes impedance matching between circuits easy.
- Good mechanical protection and vibration resistance because central ferrite drum has surrounding cup core held in place by threaded internal plastic collar. Collar fits tightly against metallic electrostatic shield that has exclusive ribbed support windows to produce constant down pressure on the plastic support, preventing microphonics (howling) and increasing stability.
- Extremely smooth tuning torque for precise adjustment.
- Large drum core for greater range of inductances.
- Optimum final tuning, due to the large specified percentage adjustment range.
- Plated brass can, to provide static and magnetic shielding. Cup core provides additional magnetic shielding, assuring low EMI.
- Presoldered terminal pins ensure a highly reliable PCB connection.
- Stand-offs on base to keep coil straight during wave soldering and facilitate flux cleaning.
- Base is thick, high-temperature UL 94V-1 grade phenol to protect coil during wave soldering.
- Automatic insertion packaging available.



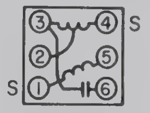
*CONNECTION NO*



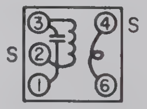
*CONNECTION EK*



*CONNECTION Z*



*CONNECTION LO*



*CONNECTION MO*

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

1. Available with internal capacitors: The standard increments shown on Page 4 (from 5-100pF).
2. This device comes with 6 terminals to accommodate transformer winding and/or tap.
3. Presoldered ground tabs available.

### *TYPE 10EZ High Frequency*

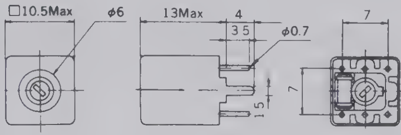
| TOKO Part Number | Inductance Range (μH) | Q (min.) | Freq. (MHz) |
|---|---|---|---|
| 154ANS-T1005Z | 4.7 ± 10% | 100 | 7.96 |
| 154ANS-T1006Z | 5.6 ± 10% | 100 | 7.96 |
| 154ANS-T1007Z | 6.8 ± 10% | 100 | 7.96 |
| 154ANS-T1008Z | 8.2 ± 10% | 100 | 7.96 |
| 154ANS-T1009Z | 10.0 ± 10% | 60 | 2.52 |
| 154ANS-T1010Z | 12.0 ± 10% | 60 | 2.52 |
| 154ANS-T1011Z | 15.0 ± 10% | 60 | 2.52 |
| 154ANS-T1012Z | 18.0 ± 10% | 60 | 2.52 |
| 154ANS-T1013Z | 22.0 ± 10% | 60 | 2.52 |
| 154ANS-T1014Z | 27.0 ± 10% | 60 | 2.52 |
| 154ANS-T1015Z | 33.0 ± 10% | 60 | 2.52 |
| 154ANS-T1016Z | 39.0 ± 10% | 60 | 2.52 |
| 154ANS-T1017Z | 47.0 ± 10% | 60 | 2.52 |
| 154ANS-T1018Z | 56.0 ± 10% | 60 | 2.52 |
| 154ANS-T1019Z | 68.0 ± 10% | 60 | 2.52 |
| 154ANS-T1020Z | 82.0 ± 10% | 60 | 2.52 |

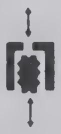
### *TYPE 10EZ High Frequency with Internal Capacitor*

| TOKO Part Number | Tuning Capacitance (pF) | Turns Ratio: 1-3/2-3 | 1-3/4-6 | Others | Q (min.) | Test Freq. (MHz) |
|---|---|---|---|---|---|---|
| 154AC-470032NO | 47 + 5(ext) | 14:3 | 14:2 | | 110 ± 20% | 10.7 |
| 154AC-470033NO | 47 + 5(ext) | 14:3 | 14:3 | | 110 ± 20% | 10.7 |
| 154AC-470052NO | 45 + 5(ext) | 14:5 | 14:2 | | 120 ± 20% | 10.7 |
| 154AC-470072NO | 47 + 5(ext) | 14:7 | 14:2 | | 110 ± 20% | 10.7 |
| 154AC-470073NO | 47 + 5(ext) | 14:7 | 14:3 | | 120 ± 20% | 10.7 |
| 154AC-470084LO | 47 + 3(ext) | | | 4-3/2-3 13.5:8<br>4-3/1-5 13.5:4.5 | 95 ± 20% | 10.7 |
| 154AC-470085LO | 47 + 3(ext) | | | 4-3/2-3 13.5:8<br>4-3/1-5 13.5:5.5 | 85 ± 20% | 10.7 |
| 154AC-7A5681EK | 47 + 3(ext) | 7:4 | 14:1 | | 110 ± 20% | 10.7 |
| 154AC-820111MO | 82 + 5(ext) | | | 2-3/4-6 11:1 | 100 ± 20% | 10.7 |
| 154AC-820112MO | 82 + 5(ext) | | | 2-3/4-6 11:2 | 95 ± 20% | 10.7 |
| 154FC-560061NO | 56 + 0(ext) | 2:1 | 12:1 | | 120 ± 20% | 10.7 |
| 154FC-820051NO | 82 + 0(ext) | 2:1 | 10:1 | | 110 ± 20% | 10.7 |
| 154PC-470033NO | 47 + 5(ext) | 14:3 | 14:3 | | 60 ± 20% | 10.7 |
| 154PC-470053NO | 47 + 5(ext) | 14:5 | 14:3 | | 60 ± 20% | 10.7 |
| 154PC-470073NO | 47 + 5(ext) | 14:7 | 14:3 | | 60 ± 20% | 10.7 |

## 10mm TYPE 10K

***Frequency Range:*** 2MHz-120MHz
***Inductance Range:*** .08µH-82µH
***Temperature Coefficient:*** Of Inductor TC(L) 220 ± 150ppm/°C max
With Internal Capacitor TC(F) 0 ± 150ppm/°C
***Internal Capacitance Values:*** 5-100pF (1)

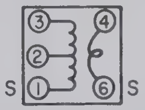




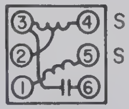
*Tuning Method*
*Tuning Tool: 71-0490 or 71-1471*

## Quality Features:

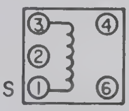
- Over one billion in service worldwide! Patented coil form has many narrow, closely-spaced horizontal slots and 4 vertical slots (other manufacturers have two or none) to bring windings down to the terminals. This assures minimum stray capacitance and yields a high Q. It also facilitates duplicating the electrical characteristics more precisely for consistent impedance, center frequency, Q and inductance. The high Q (typically 70-140) and T.C. values are exceptionally steady throughout the tuning range, making impedance matching between circuits easier.
- Coil bobbin is very accessible for prototyping.
- This device is available to match most types of ceramic and crystal filters to speed your design and assure compatibility of components.
- Excellent mechanical protection and resistance to temperature fluctuations, humidity, vibration and shock.
- The polypropylene coil form has an internally splined body design precisely matched to the tuning slug providing excellent torque control (torque range is guaranteed). This reduces problems of core breakage during trimming and once aligned in the circuit, the setting is maintained throughout the manufacturing process. In extremely demanding applications, this precision eliminates the need and expense of locking screws.
- Optimum final tuning, due to the large specified percentage adjustment range.
- Plated brass can, to provide static and magnetic shielding. Cup core provides additional magnetic shielding, assuring low EMI.
- Presoldered terminal pins ensure a highly reliable PCB connection.
- Stand-offs on base to keep coil straight during wave soldering and facilitate flux cleaning.
- Base is thick, high-temperature UL 94V-1 grade phenol to protect coil during wave soldering.
- Automatic insertion packaging available.



*CONNECTION A*



*CONNECTION PPF*



*CONNECTION Z, HM*

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

1. Available with internal ceramic capacitors: The standard increments shown on Page 4 (from 5 to 100pF).
2. This device comes with 6 terminals to accommodate transformer winding and/or tap.
3. As an option, this type is available with a funnel tapered tuning slot for automatic alignment machines.
4. These coils are bonded, and have pre-soldered terminal pins.

### TYPE 10K

| TOKO Part Number | Inductance Range (µH) | Q (min.) | Test Freq. (MHz) | Shield |
|---|---|---|---|---|
| 4BTKENS-T1043Z | 0.08 ± 2% | 50 | 75.0 | Yes |
| 4BTKENS-T1044Z | 0.10 ± 6% | 60 | 75.0 | Yes |
| 4BTKENS-T1045Z | 0.15 ± 6% | 60 | 75.0 | Yes |
| 4BTKENS-T1046Z | 0.22 ± 6% | 60 | 75.0 | Yes |
| 4BTKXNS-T1047Z | 0.33 ± 6% | 60 | 45.0 | Yes |
| 4BTKXNS-T1048Z | 0.47 ± 6% | 70 | 45.0 | Yes |
| TKXN-9455HM | 0.47 ± 6% | 80 | 25.2 | Yes |
| TKXNF-9427HM | 0.47 ± 6% | 80 | 25.2 | No |
| TKXN-9454HM | 0.56 ± 6% | 80 | 25.2 | Yes |
| TKXNF-9426HM | 0.56 ± 6% | 80 | 25.2 | No |
| 4BTKXNS-T1049Z | 0.68 ± 6% | 70 | 45.0 | Yes |
| TKXN-9453HM | 0.68 ± 6% | 100 | 25.2 | Yes |
| TKXNF-9425HM | 0.68 ± 6% | 80 | 25.2 | No |
| TKXN-9452HM | 0.82 ± 6% | 100 | 25.2 | Yes |
| TKXNF-9424HM | 0.82 ± 6% | 80 | 25.2 | No |
| 4BTKXNS-T1050Z | 1.00 ± 6% | 80 | 25.2 | Yes |

### TYPE 10K (cont.)

| TOKO Part Number | Inductance Range (µH) | Q (min.) | Test Freq. (MHz) | Shield |
|---|---|---|---|---|
| TKXN-9451HM | 1.0 ± 6% | 100 | 25.2 | Yes |
| TKXNF-9423HM | 1.0 ± 6% | 80 | 25.2 | No |
| BTKANS-9450HM | 1.2 ± 6% | 60 | 7.96 | Yes |
| TKANF-9422HM | 1.2 ± 6% | 50 | 7.96 | No |
| 4BTKANS-9449HM | 1.5 ± 6% | 60 | 7.96 | Yes |
| TKAN-9449HM | 1.5 ± 6% | 60 | 7.96 | Yes |
| TKANF-9421HM | 1.5 ± 6% | 55 | 7.96 | No |
| TKAN-9448Z | 1.8 ± 6% | 60 | 7.96 | Yes |
| TKANF-9420HM | 1.8 ± 6% | 60 | 7.96 | No |
| BKTANS-9447HM | 2.2 ± 6% | 60 | 7.96 | Yes |
| TKAN-9447HM | 2.2 ± 6% | 60 | 7.96 | Yes |
| TKANF-9419HM | 2.2 ± 6% | 65 | 7.96 | No |
| BTKANS-9446HM | 2.7 ± 6% | 70 | 7.96 | Yes |
| TKANF-9418HM | 2.7 ± 6% | 65 | 7.96 | No |
| 4BTKANS-9445HM | 3.3 ± 6% | 70 | 7.96 | Yes |
| TKAN-9445HM | 3.3 ± 6% | 70 | 7.96 | Yes |

*continued on next page*

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### *TYPE 10K (cont.)*

| TOKO Part Number | Inductance Range (μH) | Q (min.) | Test Freq. (MHz) | Shield |
|---|---|---|---|---|
| TKANF-9417HM | 3.3 ± 6% | 70 | 7.96 | No |
| TKAN-9444HM | 3.9 ± 6% | 70 | 7.96 | Yes |
| TKANF-9416HM | 3.9 ± 6% | 70 | 7.96 | No |
| [4]BKTANS-9443HM | 4.7 ± 6% | 70 | 7.96 | Yes |
| TKAN-9443HM | 4.7 ± 6% | 70 | 7.96 | Yes |
| TKANF-9415HM | 4.7 ± 6% | 65 | 7.96 | No |
| TKAN-9442HM | 5.6 ± 6% | 70 | 7.96 | Yes |
| TKANF-9414HM | 5.6 ± 6% | 70 | 7.96 | No |
| [4]BTKANS-9441HM | 6.8 ± 6% | 70 | 7.96 | Yes |
| TKAN-9441HM | 6.8 ± 6% | 70 | 7.96 | Yes |
| TKANF-9413HM | 6.8 ± 6% | 60 | 7.96 | No |
| TKAN-9440HM | 8.2 ± 6% | 70 | 7.96 | Yes |
| TKANF-9412HM | 8.2 ± 6% | 70 | 7.96 | No |
| [4]BTKANS-9439HM | 10.0 ± 6% | 70 | 7.96 | Yes |
| TKAN-9439HM | 10.0 ± 6% | 70 | 7.96 | Yes |
| TKANF-9411HM | 10.0 ± 6% | 70 | 7.96 | No |
| TKAN-9438HM | 12.0 ± 6% | 55 | 2.52 | Yes |
| TKANF-9410HM | 12.0 ± 6% | 60 | 2.52 | No |
| BTKANS-9437HM | 15.0 ± 6% | 50 | 2.52 | Yes |

### *TYPE 10K (cont.)*

| TOKO Part Number | Inductance Range (μH) | Q (min.) | Test Freq. (MHz) | Shield |
|---|---|---|---|---|
| TKANF-9409HM | 15.0 ± 6% | 60 | 2.52 | No |
| BTKANS-9436Z | 18.0 ± 6% | 50 | 2.52 | Yes |
| TKANF-9408HM | 18.0 ± 6% | 50 | 2.52 | No |
| BTKANS-9435HM | 22.0 ± 6% | 50 | 2.52 | Yes |
| TKANF-9407HM | 22.0 ± 6% | 45 | 2.52 | No |
| TKAN-9434HM | 27.0 ± 6% | 50 | 2.52 | Yes |
| TKANF-9406HM | 27.0 ± 6% | 50 | 2.52 | No |
| TKAN-9433HM | 33.0 ± 6% | 50 | 2.52 | Yes |
| TKANF-9405HM | 33.0 ± 6% | 50 | 2.52 | No |
| TKAN-9432HM | 39.0 ± 6% | 45 | 2.52 | Yes |
| TKANF-9404HM | 39.0 ± 6% | 50 | 2.52 | No |
| BTKANS-9431HM | 47.0 ± 6% | 45 | 2.52 | Yes |
| TKANF-9403HM | 47.0 ± 6% | 50 | 2.52 | No |
| BTKANS-9430HM | 56.0 ± 6% | 50 | 2.52 | Yes |
| TKANF-9402HM | 56.0 ± 6% | 50 | 2.52 | No |
| TKAN-9429HM | 68.0 ± 8% | 50 | 2.52 | Yes |
| TKANF-9401HM | 68.0 ± 6% | 60 | 2.52 | No |
| TKAN-9428HM | 82.0 ± 8% | 50 | 2.52 | Yes |
| TKANF-9400HM | 82.0 ± 6% | 60 | 2.52 | No |

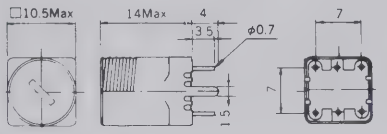
1. Radio detector coil for primary.
2. Radio detector coil for secondary.
3. Radio detector coil for quadrature coil.

### *TYPE 10K with Internal Capacitor*

| TOKO Part Number | Tuning Capacitance (pF) | Turns Ratio: 1-3/2-3 | Turns Ratio: 1-3/4-6 | Turns Ratio: Others | Q (min.) | Test Frequency (MHz) |
|---|---|---|---|---|---|---|
| TKACS-6184A | 82 + 5 (ext) | 13:3 | 13:3 | | 65 ± 20% | 10.7 |
| TKACS-6185PPF[1] | 33 + 5 (ext) | | | 4-3/2-3 20.5:11<br>4-3/5-1 20.5:5.5 | 68 ± 20% | 10.7 |
| TKACS-6186SZ[2] | 56 + 0 (ext) | 16:8 | 16:1 | | 78 ± 20% | 10.7 |
| BTKAC-28551Z[3] | 100 + 0 (ext) | | | | 55 ± 20% | 5.5 |
| YBTKAES-2988Z[3] | 47 + 10(ext) | | | | 55 ± 20% | 4.5 |
| YTKAEAS-29377Z[3] | 82 + 0 (ext) | | | | 60 ± 20% | 10.7 |

## 10mm TYPE 10PA

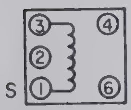
***Frequency Range:*** 10kHz-200kHz
***Inductance Range:*** 1mH-56mH
***Temperature Coefficient:*** 220 ± 220ppm/°C max



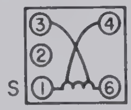
*Tuning Method*
*Tuning Tool: #71-0490*
*For Both 10PA & 10SE*

## *Quality Features:*

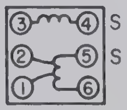
- Unique design has cup core adjustor threaded directly into shield to improve stability and make the drum more accessible for prototyping.
- The larger drum and cup core produces high inductances and greatly improves saturation levels. This increased inductance makes this coil ideal for audio oscillator, switching and filter applications.
- The higher inductance makes the 10PA suitable for low frequency filter applications, such as multiplex stereo TV system, as well as applications where high saturation levels become useful in achieving extended dynamic range.
- Ideal for ultrasonic transducer because of high current consumption circuit.
- Unrestricted upper limit on cup core adjustor (will increase height dimension) allows large range of adjustment.
- The coil form is wax-impregnated to form a moisture barrier against corrosion and to prevent microphonics (howling).
- Plated brass can, to provide static and magnetic shielding. The cup core provides additional magnetic shielding assuring low EMI.
- Presoldered terminal pins ensure a highly reliable PCB connection.



*CONNECTION*
*Z*



*CONNECTION*
*BHD*



*CONNECTION*
*YUK*

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

1. This device comes with 6 terminals to accommodate transformer winding and/or tap. 2. Presoldered ground tabs are available.

### *TYPE 10PA*

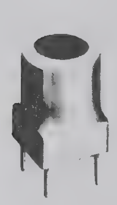
| TOKO Part Number | Inductance Range (mH) | Q (min.) | Test Freq. (kHz) |
|---|---|---|---|
| CLNS-T1018Z | 1.0 ± 10% | 80 | 252 |
| CLNS-T1019Z | 1.2 ± 10% | 80 | 252 |
| CLNS-T1020Z | 1.5 ± 10% | 80 | 252 |
| CLNS-T1021Z | 1.8 ± 10% | 80 | 252 |
| CLNS-T1022Z | 2.2 ± 10% | 80 | 252 |
| CLNS-T1023Z | 2.7 ± 10% | 80 | 252 |
| CLNS-T1024Z | 3.3 ± 10% | 80 | 252 |
| CLNS-T1025Z | 3.9 ± 10% | 80 | 252 |
| CLNS-T1026Z | 4.7 ± 10% | 80 | 252 |
| CLNS-T1027Z | 5.6 ± 10% | 80 | 252 |
| CLNS-T1028Z | 6.8 ± 10% | 80 | 252 |

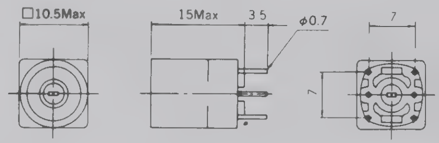
### *TYPE 10PA (cont.)*

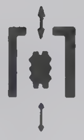
| TOKO Part Number | Inductance Range (mH) | Q (min.) | Test Freq. (kHz) |
|---|---|---|---|
| CLNS-T1029Z | 8.2 ± 10% | 80 | 252 |
| CLNS-T1030Z | 10.0 ± 10% | 70 | 79.6 |
| CLNS-T1031Z | 12.0 ± 10% | 70 | 79.6 |
| CLNS-T1032Z | 15.0 ± 10% | 70 | 79.6 |
| CLNS-T1033Z | 18.0 ± 10% | 70 | 79.6 |
| CLNS-T1034Z | 22.0 ± 10% | 70 | 79.6 |
| CLNS-T1035Z | 27.0 ± 10% | 70 | 79.6 |
| CLNS-T1036Z | 33.0 ± 10% | 70 | 79.6 |
| CLNS-T1037Z | 39.0 ± 10% | 70 | 79.6 |
| CLNS-T1038Z | 47.0 ± 10% | 70 | 79.6 |
| CLNS-T1039Z | 56.0 ± 10% | 70 | 79.6 |

## 10mm TYPE 10YXA

***Frequency Range:*** 10kHz-200kHz
***Inductance Range:*** 1mH-40mH
***Temperature Coefficient:*** 250ppm/°C max



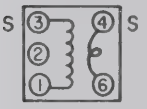




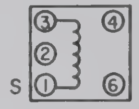
*Tuning Method*
*Tuning Tool: #71-0490*

## *Quality Features:*

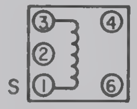
- Large capacity bobbin accommodates thicker AWG wire sizes to provide inductances up to 40mH and high Q's (95 typical).
- Tuning from top or bottom adds flexibility to your designs.
- Excellent resistance to temperature fluctuations, humidity, vibration and shock.
- The polypropylene coil form has a splined body design precisely matched to the tuning slug providing excellent torque control (torque range is guaranteed). This reduces problems of core breakage during trimming and once aligned in the circuit, the setting is maintained throughout the manufacturing process. In extremely demanding applications, this precision eliminates the need and expense of locking screws.
- Optimum final tuning, with adjustments of ±10% of the inductance value.
- The pot core provides electromagnetic shielding for low EMI.
- Presoldered terminal pins ensure a highly reliable PCB connection.



*CONNECTION AG*



*CONNECTION Z*



*CONNECTION HM*

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

1. This device comes with 6 terminals to accommodate a transformer winding and/or tap.
2. Optional plated brass shield is available (Type IONSF).
3. For NS LM1871
4. For Motorola MC1377, Modified from TOKO 166 NNF$^5$ 10264 AG

### *TYPE 10YXA*

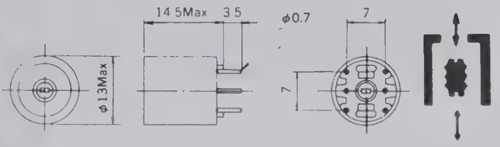
| TOKO Part Number | Inductance Range @ 1kHz (mH) | Q (min.) | Test Freq. (kHz) |
|---|---|---|---|
| 718YXA-102Z | 1.0 ± 10% | 70 ± 20% | 79.6 |
| 718YXA-103Z | 10.0 ± 10% | 88 ± 20% | 79.6 |
| 718YXA-122Z | 1.2 ± 10% | 75 ± 20% | 79.6 |
| 718YXA-123Z | 12.0 ± 10% | 92 ± 20% | 79.6 |
| 718YXA-152Z | 1.5 ± 10% | 80 ± 20% | 79.6 |
| 718YXA-153Z | 15.0 ± 10% | 83 ± 20% | 79.6 |
| 718YXA-182Z | 1.8 ± 10% | 82 ± 20% | 79.6 |
| 718YXA-183Z | 18.0 ± 10% | 88 ± 20% | 79.6 |
| 718YXA-222Z | 2.2 ± 10% | 87 ± 20% | 79.6 |
| 718YXA-223Z | 22.0 ± 10% | 88 ± 20% | 79.6 |

### *TYPE 10YXA (cont.)*

| TOKO Part Number | Inductance Range @ 1kHz (mH) | Q (min.) | Test Freq. (kHz) |
|---|---|---|---|
| 718YXA-272Z | 2.7 ± 10% | 94 ± 20% | 79.6 |
| 718YXA-332Z | 3.3 ± 10% | 83 ± 20% | 79.6 |
| 718YXA-392Z | 3.9 ± 10% | 89 ± 20% | 79.6 |
| 718YXA-472Z | 4.7 ± 10% | 90 ± 20% | 79.6 |
| 718YXA-562Z | 5.6 ± 10% | 87 ± 20% | 79.6 |
| 718YXA-682Z | 6.8 ± 10% | 91 ± 20% | 79.6 |
| 718YXA-822Z | 8.2 ± 10% | 93 ± 20% | 79.6 |

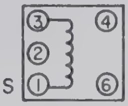
## 12mm TYPE 12VXA

***Frequency Range:*** 10kHz-200kHz
***Inductance Range:*** 1mH-60mH
***Temperature Coefficient:*** 250ppm/°C

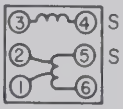


### Quality Features:

- Large capacity bobbin accommodates thicker AWG wires sizes to provide inductances up to 60mH and Q's of 80 typical.
- The ability to tune from top or bottom adds flexibility to your designs.
- Excellent resistance to temperature fluctuations, humidity, vibration and shock.
- The polypropylene coil form has an internally splined body design precisely matched to the tuning slug providing excellent torque conrtol. Once aligned in the circuit, the setting is maintained throughout the manufacturing process. This precision eliminates the need and expense of locking screws.
- Optimum final tuning, with adjustments of ±10% of the inductance.
- The pot core provides electromagnetic shielding for low EMI.
- Presoldered terminal pins ensure a highly reliable PCB connection.



*CONNECTION*
*HM*



*CONNECTION*
*YUK*

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

1. This device comes with 6 terminals to accommodate a transformer winding and/or tap.

### *TYPE 12VXA*

| TOKO Part Number | Variable Inductance Range ( mH) | Qμ | Measured Frequency (kHz) | Ref. Data (Typ.) DCR. (OHM) | Ref. Data (Typ.) SRF (MHZ) |
|---|---|---|---|---|---|
| 719VXA-T1007Z | 1.0±10% | 20 min | 252 | 2.9 | 1.44 |
| 719VXA-T1008Z | 1.2±10% | 20 min | 252 | 3.3 | 1.23 |
| 719VXA-T1009Z | 1.5±10% | 20 min | 252 | 3.6 | 1.10 |
| 719VXA-T1010Z | 1.8±10% | 20 min | 252 | 5.3 | 1.02 |
| 719VXA-T1011Z | 2.0±10% | 20 min | 252 | 5.7 | 0.90 |
| 719VXA-T1012Z | 2.2±10% | 20 min | 252 | 6.3 | 0.88 |
| 719VXA-T1013Z | 2.4±10% | 20 min | 252 | 6.4 | 0.83 |
| 719VXA-T1014Z | 2.7±10% | 20 min | 252 | 6.7 | 0.78 |
| 719VXA-T1015Z | 3.0±10% | 20 min | 252 | 7.0 | 0.75 |
| 719VXA-T1016Z | 3.3±10% | 20 min | 252 | 7.3 | 0.74 |
| 719VXA-T1017Z | 3.6±10% | 20 min | 252 | 7.5 | 0.73 |
| 719VXA-T1018Z | 3.9±10% | 20 min | 252 | 7.7 | 0.62 |
| 719VXA-T1019Z | 4.3±10% | 20 min | 252 | 7.9 | 0.61 |
| 719VXA-T1020Z | 4.7±10% | 20 min | 252 | 10.3 | 0.61 |
| 719VXA-T1021Z | 5.1±10% | 20 min | 252 | 10.8 | 0.60 |
| 719VXA-T1022Z | 5.6±10% | 20 min | 252 | 11.3 | 0.58 |
| 719VXA-T1023Z | 6.2±10% | 20 min | 252 | 11.5 | 0.56 |
| 719VXA-T1024Z | 6.8±10% | 20 min | 252 | 12.5 | 0.55 |
| 719VXA-T1025Z | 7.5±10% | 20 min | 252 | 13.0 | 0.54 |
| 719VXA-T1026Z | 8.2±10% | 20 min | 252 | 14.0 | 0.53 |
| 719VXA-T1027Z | 9.1±10% | 20 min | 252 | 15.0 | 0.51 |
| 719VXA-T1028Z | 10.0±10% | 45 min | 79.6 | 22.8 | 0.44 |
| 719VXA-T1029Z | 12.0±10% | 45 min | 79.6 | 35 | 0.41 |
| 719VXA-T1030Z | 15.0±10% | 45 min | 79.6 | 40 | 0.39 |
| 719VXA-T1031Z | 18.0±10% | 45 min | 79.6 | 47 | 0.36 |
| 719VXA-T1032Z | 20.0±10% | 45 min | 79.6 | 51 | 0.34 |
| 719VXA-T1033Z | 22.0±10% | 45 min | 79.6 | 53 | 0.32 |
| 719VXA-T1034Z | 24.0±10% | 45 min | 79.6 | 55 | 0.31 |
| 719VXA-T1035Z | 27.0±10% | 45 min | 79.6 | 57 | 0.31 |
| 719VXA-T1036Z | 30.0±10% | 45 min | 79.6 | 70 | 0.28 |
| 719VXA-T1037Z | 33.0±10% | 45 min | 79.6 | 78 | 0.27 |
| 719VXA-T1038Z | 36.0±10% | 45 min | 79.6 | 95 | 0.26 |
| 719VXA-T1039Z | 39.0±10% | 45 min | 79.6 | 100 | 0.25 |
| 719VXA-T1040Z | 43.0±10% | 45 min | 79.6 | 108 | 0.24 |
| 719VXA-T1041Z | 47.0±10% | 45 min | 79.6 | 112 | 0.22 |
| 719VXA-T1042Z | 51.0±10% | 45 min | 79.6 | 115 | 0.21 |
| 719VXA-T1043Z | 56.0±10% | 45 min | 79.6 | 140 | 0.21 |
| 719VXA-T1044Z | 62.0±10% | 45 min | 79.6 | 150 | 0.20 |
| 719VXA-T1045Z | 68.0±10% | 45 min | 79.6 | 160 | 0.20 |

# FIXED INDUCTORS AND NOISE FILTERS

Many of the Fixed Inductors and Noise Filters shown on the following pages feature construction that make them unique and special. Smaller size, wider frequency ranges, closer tolerances and other superior characteristics make TOKO a leader in Fixed Inductors and Noise Filters. TOKO will also design and manufacture custom inductors and filters with specific characteristics to meet your requirements.

TOKO Fixed Inductors and Noise Filters are manufactured utilizing the most progressive automatic winding and assembly equipment in the industry. TOKO engineers have designed production equipment so exacting and advanced that uniformity and reliability are assured. This solid value for the money has made TOKO the standard by which others are judged.

Exclusive TOKO adjustment process is done "on line" with automatic calibrating equipment to produce a consistent inductance value, coil after coil. Final setting on most designs is then permanently held in place by a special epoxy resin.

Frequency range applies only in circuits where Q value is a consideration. If Q is not important, such as when using noise filters in power supplies, then higher frequencies may be achieved.

Various packaging schemes are available. In addition to bulk, bandoliered reels and ammo packs are offered for high volume insertion equipment. Consult the automatic insertion packaging information on Page 128 for details.

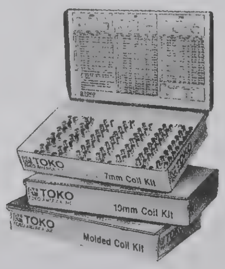
# FIXED INDUCTORS AND NOISE FILTERS

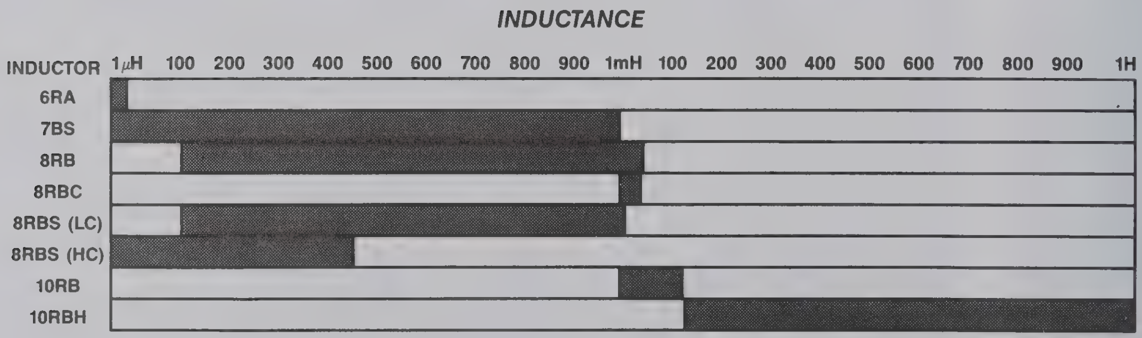
## *Internal Matching Capacitors Option for 8RBC Type*

We recommend selecting the option of internal matching ceramic capacitors when available (8RBC). This option offers the most stable temperature coefficient possible, conserves board space, saves design and assembly time and eliminates problems of sourcing capacitors from a separate vendor.

**Standard Ceramic Capacitor Values Available:** The following table shows the standard capacitance values that are available (in pF). Each type of fixed inductor/noise filter specifies its own range of values from this table. If you require a value not listed here (as standard), please specify your requirement using the Custom/Modified Request Form located in the rear of this catalog.

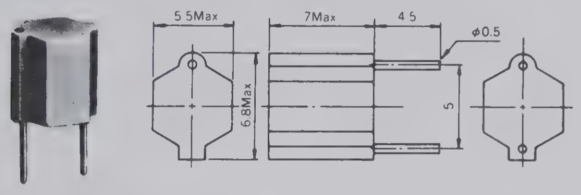
**Standard Capacitor Increments**
5, 6, 7, 8, 9, 10, 12, 15, 18, 22, 27, 33, 39, 47, 56, 68, 82, 100, 120, 150, 180, 390, 470, 1,000, 1,500, and 6,800 pF.





## TYPE 7BS Fixed Inductor

***Frequency Range:*** (See Actual Part Number) (1)
***Inductance Range:*** 1μH-1mH
***Temperature Coefficient:*** 300ppm/°C max



## *Quality Features:*

- Low profile and narrow width for compact applications. The ferrite drum base design features notches that allows the terminal pins to be affixed directly to the ferrite, thus eliminating the need for a plastic base and added width.
- Consistent dimensional shape and mechanical protection due to one piece injection molded construction.
- High Q value and very low distributed capacitance give good performance in miniaturized configurations.
- Presoldered terminal pins for highly reliable PCB connections.

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

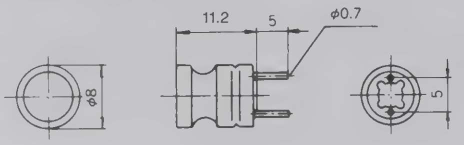
1. Frequency range applies only in circuits where Q value is a consideration. If Q is not important, such as noise filters in power supplies, then higher frequencies may be achieved.
2. Add following tolerance code to Part No. : J = ±5%, K = ± 10%, M = 20%
3. Q and Inductance are measured by Q meter YHP-4343B or equivalent.
4. Self resonant frequency is for reference only.

### *TYPE 7BS*

| TOKO Part[2] Number | Inductance (μH)[2] | Q[3] (min.) | Test Frequency (MHz) | DC Resistance (Ω) max. | Self Resonant Frequency[4] (MHz) min. | IDC (mA) max. |
|---|---|---|---|---|---|---|
| 283AS-1R0K,M | 1.0 | 40 | 7.96 | 1.0 | 125 | 100 |
| 283AS-1R2K,M | 1.2 | 40 | 7.96 | 1.0 | 122 | 100 |
| 283AS-1R5K,M | 1.5 | 40 | 7.96 | 1.0 | 113 | 100 |
| 283AS-1R8K,M | 1.8 | 40 | 7.96 | 1.0 | 35 | 100 |
| 283AS-2R2K,M | 2.2 | 40 | 7.96 | 1.0 | 85 | 100 |
| 283AS-2R7K,M | 2.7 | 40 | 7.96 | 1.0 | 75 | 100 |
| 283AS-3R3K,M | 3.3 | 40 | 7.96 | 1.0 | 72 | 100 |
| 283AS-3R9K,M | 3.9 | 40 | 7.96 | 1.0 | 60 | 100 |
| 283AS-4R7K,M | 4.7 | 40 | 7.96 | 1.0 | 56 | 100 |
| 283AS-5R6K,M | 5.6 | 40 | 7.96 | 1.0 | 45 | 100 |
| 283AS-6R8K,M | 6.8 | 40 | 7.96 | 1.5 | 35 | 100 |
| 283AS-8R2K,M | 8.2 | 40 | 7.96 | 1.5 | 22.5 | 100 |
| 283AS-100J,K | 10.0 | 40 | 7.96 | 1.5 | 20.5 | 100 |
| 283AS-120J,K | 12.0 | 40 | 2.52 | 1.5 | 16.6 | 100 |
| 283AS-150J,K | 15.0 | 40 | 2.52 | 1.5 | 12.8 | 100 |
| 283AS-180J,K | 18.0 | 40 | 2.52 | 1.5 | 10.0 | 100 |
| 283AS-220J,K | 22.0 | 40 | 2.52 | 1.5 | 8.7 | 100 |
| 283AS-270J,K | 27.0 | 40 | 2.52 | 2.0 | 8.2 | 100 |
| 283AS-330J,K | 33.0 | 40 | 2.52 | 2.0 | 8.0 | 100 |
| 283AS-390J,K | 39.0 | 40 | 2.52 | 2.0 | 6.5 | 100 |
| 283AS-470J,K | 47.0 | 40 | 2.52 | 3.0 | 6.0 | 100 |
| 283AS-560J,K | 56.0 | 40 | 2.52 | 3.0 | 6.0 | 100 |
| 283AS-680J,K | 68.0 | 40 | 2.52 | 3.0 | 5.3 | 100 |
| 283AS-820J,K | 82.0 | 40 | 2.52 | 4.0 | 4.7 | 100 |
| 283AS-101J,K | 100.0 | 40 | 2.52 | 4.0 | 4.5 | 100 |
| 283AS-121J,K | 120.0 | 40 | .796 | 4.0 | 3.5 | 30 |
| 283AS-151J,K | 150.0 | 40 | .796 | 5.0 | 3.3 | 30 |
| 283AS-181J,K | 180.0 | 40 | .796 | 5.0 | 3.1 | 30 |
| 283AS-221J,K | 220.0 | 40 | .796 | 6.0 | 2.8 | 30 |
| 283AS-271J,K | 270.0 | 40 | .796 | 7.0 | 2.6 | 30 |
| 283AS-331J,K | 330.0 | 40 | .796 | 7.0 | 2.4 | 30 |
| 283AS-391J,K | 390.0 | 40 | .796 | 9.0 | 2.2 | 30 |
| 283AS-471J,K | 470.0 | 40 | .796 | 10.0 | 2.0 | 30 |
| 283AS-561J,K | 560.0 | 40 | .796 | 12.0 | 1.9 | 30 |
| 283AS-681J,K | 680.0 | 40 | .796 | 14.0 | 1.8 | 30 |
| 283AS-821J,K | 820.0 | 40 | .796 | 15.0 | 1.7 | 30 |
| 283AS-102J,K | 1000.0 | 40 | .796 | 17.0 | 1.5 | 30 |

## TYPE 8RB Fixed Inductor

***Frequency Range:*** 400kHz-6MHz(1)
***Inductance Range:*** 5.6μH-33mH
***Temperature Coefficient:*** 350ppm/°C, max



### *Quality Features:*

- The high inductance produced makes this an ideal choke coil and trap coil.
- The entire winding core and base are encapsulated in a heat shrinked plastic housing that provides mechanical and environmental protection.
- The base has four slotted wire wells to hold wire securely in place between winding and terminals and protect against impact. These wells also permit terminating the wire in 90 degree increments so that much tighter specifications can be produced. Also, cross support is molded into the base to protect winding terminations from damage during PCB insertion.
- Coil winding terminations are wound and soldered to assure a secure bond to terminal pins.
- Presoldered terminal pins assure reliable soldered connections to the PCB.
- Terminal ends are rounded to facilitate PCB insertion.
- Base is thick high-temperature UL 94V-1 grade phenol to protect coil during wave soldering.
- Exclusive TOKO measurement process is done "on line" with automatic calibrating equipment to produce a consistent inductance value, coil after coil.

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

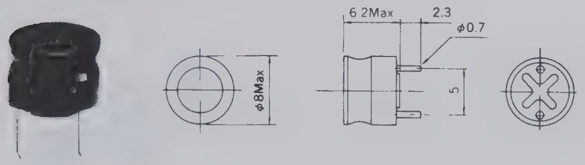
1. Frequency range applies only in circuits where Q value is a consideration. If Q is not important, such as noise filters in power supplies, then higher frequencies may be achieved.
2. Add the following inductance tolerance code to Part Number within ( ): J = ±5%, K = ±10%.
3. Q and Inductance are measured by Q meter HP-4342A or equivalent.
4. The rated DC current is that which the inductance value decreases 10% by the applied DC current, measured at 1kHz by universal bridge or equivalent.
5. Self resonant frequency is for reference only.

### *TYPE 8RB*

| TOKO Part[2] Number | Inductance (mH)[3] | Q[3] (min.) | Test Frequency (kHz) | DC Resistance (Ω) max. | Rated DC Current[4] (mA) max. | Self Resonant Frequency[5] (MHz) min. |
|---|---|---|---|---|---|---|
| 187LY-101( ) | 0.10 | 80 | 796 | 2.0 | 200 | 5.3 |
| 187LY-121( ) | 0.12 | 80 | 796 | 2.0 | 200 | 4.5 |
| 187LY-151( ) | 0.15 | 80 | 796 | 2.0 | 200 | 3.8 |
| 187LY-181( ) | 0.18 | 80 | 796 | 3.0 | 200 | 3.3 |
| 187LY-221( ) | 0.22 | 80 | 796 | 3.0 | 200 | 2.9 |
| 187LY-271( ) | 0.27 | 80 | 796 | 3.0 | 200 | 2.6 |
| 187LY-331( ) | 0.33 | 80 | 796 | 4.0 | 200 | 2.3 |
| 187LY-391( ) | 0.39 | 80 | 796 | 4.0 | 200 | 2.1 |
| 187LY-471( ) | 0.47 | 80 | 796 | 4.0 | 200 | 1.9 |
| 187LY-561( ) | 0.56 | 80 | 796 | 4.0 | 200 | 1.7 |
| 187LY-681( ) | 0.68 | 80 | 796 | 4.0 | 200 | 1.6 |
| 187LY-821( ) | 0.82 | 80 | 796 | 6.0 | 200 | 1.4 |
| 187LY-102( ) | 1.0 | 90 | 252 | 6.0 | 150 | 1.3 |
| 187LY-122( ) | 1.2 | 90 | 252 | 9.0 | 150 | 1.2 |
| 187LY-152( ) | 1.5 | 90 | 252 | 9.0 | 150 | 1.1 |
| 187LY-182( ) | 1.8 | 90 | 252 | 9.0 | 100 | 1.0 |
| 187LY-222( ) | 2.2 | 90 | 252 | 13.0 | 100 | 0.9 |
| 187LY-272( ) | 2.7 | 90 | 252 | 13.0 | 100 | 0.8 |
| 187LY-332( ) | 3.3 | 90 | 252 | 13.0 | 100 | 0.7 |
| 187LY-392( ) | 3.9 | 90 | 252 | 13.0 | 50 | 0.7 |
| 187LY-472( ) | 4.7 | 90 | 252 | 18.0 | 50 | 0.6 |
| 187LY-562( ) | 5.6 | 90 | 252 | 18.0 | 50 | 0.6 |
| 187LY-682( ) | 6.8 | 90 | 252 | 26.0 | 50 | 0.5 |
| 187LY-822( ) | 8.2 | 90 | 252 | 26.0 | 50 | 0.5 |
| 187LY-103( ) | 10.0 | 100 | 79.6 | 40.0 | 40 | 0.4 |
| 187LY-123( ) | 12.0 | 100 | 79.6 | 40.0 | 40 | 0.4 |
| 187LY-153( ) | 15.0 | 100 | 79.6 | 60.0 | 40 | 0.4 |
| 187LY-183( ) | 18.0 | 100 | 79.6 | 60.0 | 30 | 0.3 |
| 187LY-223( ) | 22.0 | 100 | 79.6 | 80.0 | 30 | 0.3 |
| 187LY-273( ) | 27.0 | 100 | 79.6 | 80.0 | 30 | 0.3 |
| 187LY-333( ) | 33.0 | 100 | 79.6 | 80.0 | 30 | 0.3 |

## TYPE 8RBS Low Current/Low Profile

***Frequency Range:*** 600kHz-6MHz(1)
***Inductance Range:*** .1mH-15mH
***Temperature Coefficient:*** 350ppm/°C, max



## *Quality Features:*

- Ideal as a choke coil and as a trap coil for applications in communication equipment.
- Entire winding core and base encapsulated in heat shrinked plastic housing providing mechanical and environmental protection.
- The base has four slotted wire wells to hold wire securely in place between winding and terminals and protect against impact. These wells also permit terminating the wire in 90 degree increments so that much tighter specifications can be produced. Also, cross support is molded into the base to protect winding terminations from damage during PCB insertion.
- Coil winding terminations are wound and soldered to assure a secure bond to terminal pins.
- Presoldered terminal pins assure reliable soldered connections to PCB.
- Terminal ends are rounded to facilitate PCB insertion.
- Base is thick, high-tempertature UL 94V-1 grade phenol to protect coil during wave soldering.

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

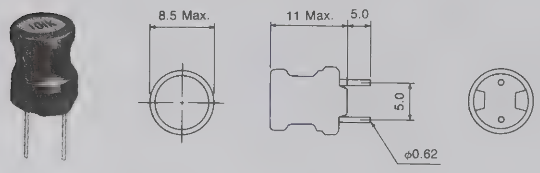
1. Frequency range applies only in circuits where Q value is a consideration. If Q is not important, such as noise filters in power supplies, then higher frequencies may be achieved.
2. Add the tolerance code to within the ( ) of the Part Number as follows: J = ±5%, K = ± 10%.
3. Q and Inductance are measured by Q meter YHP-4343B or equivalent.
4. The rated DC current is that which the inductance value decreases 10% by the excitation DC current, measured at 1kHz by universal bridge or equivalent.
5. Self resonant frequency is for reference only.

### *TYPE 8RBS - Low Profile*

| TOKO Part[2] Number | Inductance[3] (mH) | Q[3] (min.) | Test Frequency (MHz) | DC Resistance (Ω) max. | Rated DC Current[4] (mA) max. | Self Resonant Frequency[5] (MHz) min. |
|---|---|---|---|---|---|---|
| 262LY-101K | 0.10 | 60 | 796 | 2.0 | 200 | 6.1 |
| 262LY-121K | 0.12 | 60 | 796 | 3.0 | 200 | 5.5 |
| 262LY-151K | 0.15 | 60 | 796 | 3.0 | 200 | 5.0 |
| 262LY-181K | 0.18 | 60 | 796 | 3.0 | 200 | 4.7 |
| 262LY-221K | 0.22 | 60 | 796 | 3.0 | 150 | 4.5 |
| 262LY-271K | 0.27 | 60 | 796 | 3.0 | 150 | 4.1 |
| 262LY-331K | 0.33 | 60 | 796 | 4.0 | 150 | 3.8 |
| 262LY-391K | 0.39 | 60 | 796 | 4.0 | 100 | 3.5 |
| 262LY-471K | 0.47 | 60 | 796 | 5.0 | 100 | 3.2 |
| 262LY-561K | 0.56 | 60 | 796 | 6.0 | 100 | 2.9 |
| 262LY-681K | 0.68 | 60 | 796 | 6.0 | 100 | 2.7 |
| 262LY-821K | 0.82 | 60 | 796 | 7.0 | 50 | 2.3 |
| 262LY-102K | 1.0 | 80 | 252 | 9.0 | 50 | 2.1 |
| 262LY-122K | 1.2 | 80 | 252 | 9.0 | 50 | 1.9 |
| 262LY-152K | 1.5 | 80 | 252 | 11.0 | 50 | 1.8 |
| 262LY-182K | 1.8 | 80 | 252 | 12.0 | 50 | 1.6 |
| 262LY-222K | 2.2 | 80 | 252 | 14.0 | 50 | 1.5 |
| 262LY-272K | 2.7 | 80 | 252 | 15.0 | 50 | 1.4 |
| 262LY-332K | 3.3 | 80 | 252 | 25.0 | 40 | 0.9 |
| 262LY-392K | 3.9 | 80 | 252 | 30.0 | 40 | 0.9 |
| 262LY-472K | 4.7 | 80 | 252 | 32.0 | 40 | 0.8 |
| 262LY-562K | 5.6 | 80 | 252 | 36.0 | 30 | 0.7 |
| 262LY-682K | 6.8 | 80 | 252 | 40.0 | 30 | 0.7 |
| 262LY-822K | 8.2 | 80 | 252 | 45.0 | 30 | 0.6 |
| 262LY-103( ) | 10.0 | 60 | 79.6 | 55.0 | 20 | 0.6 |
| 262LY-123( ) | 12.0 | 60 | 79.6 | 65.0 | 20 | 0.5 |
| 262LY-153( ) | 15.0 | 60 | 79.6 | 80.0 | 20 | 0.5 |

## TYPE 8RHB

***Inductance Range:*** 1.0-1000μH
***Temperature Coefficient:*** 350ppm/°C, max.



### *Quality Features:*

- Ideal as a choke coil for noise filtering applications. Has a low profile and high saturation flux density ferrite core which makes this model ideal for EMI filtering (noise filtering) in power supplies used in computers, TV's. etc.
- The base has four slotted wire wells to hold wire securely in place between winding and terminals for protection against impact. These wells also permit terminating the wire in 90 degree increments so that much tighter specifications can be produced. Also, cross support is molded into the base to protect winding terminations from damage during PWB insertion.
- Coil winding terminations are wound and soldered to assure a secure bond to terminal pins.
- Presoldered terminal pins assure reliable soldered connections to PWB.
- Terminal ends are rounded to facilitate PWB insertion.

## STANDARD COILS SELECTION GUIDE

The Part Numbers shown in the table below are standard coils, which are readily available, TOKO can manufacture modified and custom coils to meet your requirements. If you do not find the coil for your application, please contact our sales office or representative office.

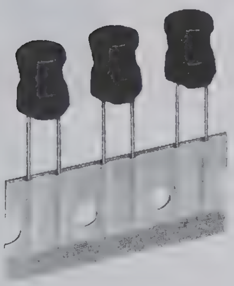
(1) Q and Inductance are measured by Q meter YHP-4343B or equivalent.
(2) The rated DC current is that which the inductance value decreases 10% by the excitation DC current, measured at 1kHz by Precision LCR meter 4284A (hp) or equivalent.
(3) SRF is measured by Network Analyzer 3577A (hp), MS560J (Anritsu) or equivalent.
(4) DC Resistance is measured by Digital Multimeter TR6871 (Advantest) or equivalent.

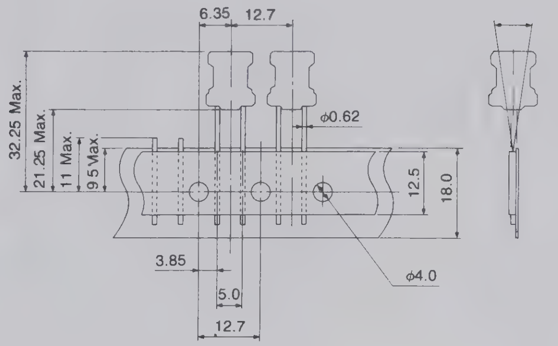
### *TYPE 8RHB*

| TOKO Part Number | Inductance L (μH) | Qu (min.) | Test Frequency of L, Qu (MHz) | DC Resistance (Ω) (max.) | Rated DC Current (A) (max.) | SRF (MHz) (min.) |
|---|---|---|---|---|---|---|
| 622LY-1R0M | 1.0±20% | 20 | 7.96 | 0.013 | 10 | 150 |
| 622LY-1R5M | 1.5±20% | 20 | 7.96 | 0.016 | 8.5 | 130 |
| 622LY-2R2M | 2.2±20% | 20 | 7.96 | 0.021 | 6.5 | 100 |
| 622LY-3R3M | 3.3±20% | 20 | 7.96 | 0.025 | 5.5 | 79 |
| 622LY-4R7M | 4.7±20% | 20 | 7.96 | 0.030 | 4.3 | 51 |
| 622LY-6R8M | 6.8±20% | 20 | 7.96 | 0.035 | 3.7 | 29 |
| 622LY-100K | 10±10% | 50 | 2.52 | 0.045 | 3.0 | 14 |
| 622LY-120K | 12±10% | 50 | 2.52 | 0.050 | 2.6 | 13 |
| 622LY-150K | 15±10% | 50 | 2.52 | 0.056 | 2.3 | 12 |
| 622LY-180K | 18±10% | 40 | 2.52 | 0.061 | 2.2 | 11 |
| 622LY-220K | 22±10% | 40 | 2.52 | 0.070 | 2.0 | 9.2 |
| 622LY-270K | 27±10% | 40 | 2.52 | 0.080 | 1.7 | 8.5 |
| 622LY-330K | 33±10% | 30 | 2.52 | 0.090 | 1.6 | 7.8 |
| 622LY-390K | 39±10% | 30 | 2.52 | 0.10 | 1.5 | 6.9 |
| 622LY-470K | 47±10% | 30 | 2.52 | 0.12 | 1.4 | 6.5 |
| 622LY-560K | 56±10% | 30 | 2.52 | 0.18 | 1.3 | 5.4 |
| 622LY-680K | 68±10% | 30 | 2.52 | 0.21 | 1.2 | 4.9 |
| 622LY-820K | 82±10% | 30 | 2.52 | 0.23 | 1.1 | 4.1 |
| 622LY-101K | 100±10% | 20 | 0.796 | 0.28 | 0.91 | 3.7 |
| 622LY-121K | 120±10% | 20 | 0.796 | 0.32 | 0.84 | 3.4 |
| 622LY-151K | 150±10% | 20 | 0.796 | 0.37 | 0.75 | 3.2 |
| 622LY-181K | 180±10% | 20 | 0.796 | 0.58 | 0.69 | 2.8 |
| 622LY-221K | 220±10% | 20 | 0.796 | 0.65 | 0.64 | 2.7 |
| 622LY-271K | 270±10% | 20 | 0.796 | 0.75 | 0.57 | 2.4 |
| 622LY-331K | 330±10% | 20 | 0.796 | 0.85 | 0.54 | 2.3 |
| 622LY-391K | 390±10% | 20 | 0.796 | 1.0 | 0.48 | 2.1 |
| 622LY-471K | 470±10% | 20 | 0.796 | 1.1 | 0.46 | 1.9 |
| 622LY-561K | 560±10% | 20 | 0.796 | 1.4 | 0.41 | 1.8 |
| 622LY-681K | 680±10% | 20 | 0.796 | 1.6 | 0.38 | 1.6 |
| 622LY-821K | 820±10% | 20 | 0.796 | 1.8 | 0.35 | 1.5 |
| 622LY-102K | 1,000±10% | 50 | 0.252 | 2.9 | 0.29 | 1.3 |

## TYPE 8RHT

***Inductance Range:*** 1.0-1000μH
***Temperature Coefficient:*** 350ppm/°C, max.





## STANDARD COILS SELECTION GUIDE

The Part Numbers shown in the table below are standard coils, which are readily available, TOKO can manufacture modified and custom coils to meet your requirements If you do not find the coil for your application, please contact our sales office or representative office.

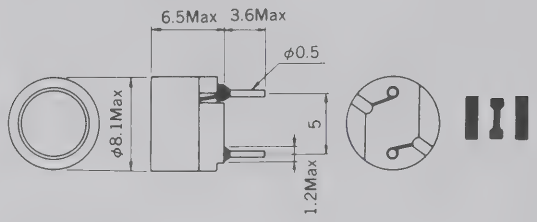
(1) Q and Inductance are measured by Q meter YHP-4343B or equivalent.
(2) The rated DC current is that which the inductance value decreases 10% by the excitation DC current, measured at 1kHz by Precision LCR meter 4284A (hp) or equivalent.
(3) SRF is measured by Network Analyzer 3577A (hp), MS560J (Anritsu) or equivalent.
(4) DC Resistance is measured by Digital Multimeter TR6871 (Advantest) or equivalent.

### *TYPE 8RHT*

| TOKO Part Number | Inductance L (μH) | Qu (min.) | Test Frequency of L, Qu (MHz) | DC Resistance (Ω) (max.) | Rated DC Current (A) (max.) | SRF (MHz) (min.) |
|---|---|---|---|---|---|---|
| 621LY-1R0M=R | 1.0±20% | 20 | 7.96 | 0.013 | 10 | 150 |
| 621LY-1R5M=R | 1.5±20% | 20 | 7.96 | 0.016 | 8.5 | 130 |
| 621LY-2R2M=R | 2.2±20% | 20 | 7.96 | 0.021 | 6.5 | 100 |
| 621LY-3R3M=R | 3.3±20% | 20 | 7.96 | 0.025 | 5.5 | 79 |
| 621LY-4R7M=R | 4.7±20% | 20 | 7.96 | 0.030 | 4.3 | 51 |
| 621LY-6R8M=R | 6.8±20% | 20 | 7.96 | 0.035 | 3.7 | 29 |
| 621LY-100K=R | 10±10% | 50 | 2.52 | 0.045 | 3.0 | 14 |
| 621LY-120K=R | 12±10% | 50 | 2.52 | 0.050 | 2.6 | 13 |
| 621LY-150K=R | 15±10% | 50 | 2.52 | 0.056 | 2.3 | 12 |
| 621LY-180K=R | 18±10% | 40 | 2.52 | 0.061 | 2.2 | 11 |
| 621LY-220K=R | 22±10% | 40 | 2.52 | 0.070 | 2.0 | 9.2 |
| 621LY-270K=R | 27±10% | 40 | 2.52 | 0.080 | 1.7 | 8.5 |
| 621LY-330K=R | 33±10% | 30 | 2.52 | 0.090 | 1.6 | 7.8 |
| 621LY-390K=R | 39±10% | 30 | 2.52 | 0.10 | 1.5 | 6.9 |
| 621LY-470K=R | 47±10% | 30 | 2.52 | 0.12 | 1.4 | 6.5 |
| 621LY-560K=R | 56±10% | 30 | 2.52 | 0.18 | 1.3 | 5.4 |
| 621LY-680K=R | 68±10% | 30 | 2.52 | 0.21 | 1.2 | 4.9 |
| 621LY-820K=R | 82±10% | 30 | 2.52 | 0.23 | 1.1 | 4.1 |
| 621LY-101K=R | 100±10% | 20 | 0.796 | 0.28 | 0.91 | 3.7 |
| 621LY-121K=R | 120±10% | 20 | 0.796 | 0.32 | 0.84 | 3.4 |
| 621LY-151K=R | 150±10% | 20 | 0.796 | 0.37 | 0.75 | 3.2 |
| 621LY-181K=R | 180±10% | 20 | 0.796 | 0.58 | 0.69 | 2.8 |
| 621LY-221K=R | 220±10% | 20 | 0.796 | 0.65 | 0.64 | 2.7 |
| 621LY-271K=R | 270±10% | 20 | 0.796 | 0.75 | 0.57 | 2.4 |
| 621LY-331K=R | 330±10% | 20 | 0.796 | 0.85 | 0.54 | 2.3 |
| 621LY-391K=R | 390±10% | 20 | 0.796 | 1.0 | 0.48 | 2.1 |
| 621LY-471K=R | 470±10% | 20 | 0.796 | 1.1 | 0.46 | 1.9 |
| 621LY-561K=R | 560±10% | 20 | 0.796 | 1.4 | 0.41 | 1.8 |
| 621LY-681K=R | 680±10% | 20 | 0.796 | 1.6 | 0.38 | 1.6 |
| 621LY-821K=R | 820±10% | 20 | 0.796 | 1.8 | 0.35 | 1.5 |
| 621LY-102K=R | 1,000±10% | 50 | 0.252 | 2.9 | 0.29 | 1.3 |

## TYPE 8RDB Fixed Inductor

***Frequency Range:*** 10-70MHz(1)
***Inductance Range:*** 4.7-200μH (High current)
***Operating Temperature:*** −25°C-85°C
***Temperature Coefficient:*** 1000ppm/°C max.



## *Quality Features:*

- Ideal as a choke coil for noise filtering applications. Has a low profile and high saturation flux density ferrite core which makes this model ideal for EMI filtering in high current power supplies used in computers, TV's, etc.

## STANDARD COILS SELECTION GUIDE

The Part Numbers shown in the table below are standard coils, which are readily available. TOKO can manufacture modified and custom coils to meet your requirements. If you do not find the coil for your application , please contact our sales office or representative office.

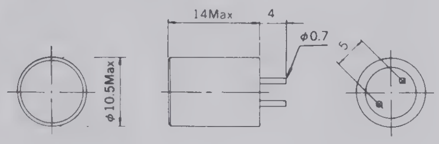
(1) Frequency range applies only in circuits where Q value is a consideration. If Q is not important, such as noise filters in power supplies, then higher frequencies may be achieved.
(2) The rated DC current is that which the inductance value decreases 10 by the excitation DC current, measured at 1kHz by universal bridge or equivalent.

### *TYPE 8RDB*

| TOKO Part Number | Inductance Range (μH) | Inductance Test Frequency | Qu (min.) | Q Test Frequency | Rated DC(2) Current |
|---|---|---|---|---|---|
| 8RDB-1026M | 4.7±20% | 7.96MHz | 15 | 3.3MHz | |
| 8RDB-100M | 10±20% | 1kHz | 30 | 100kHz | |
| 8RDB-150M | 15±20% | 1kHz | 30 | 100kHz | |
| 8RDB-180M | 18±20% | 1kHz | 30 | 100kHz | |
| 8RDB-330M | 33±20% | 1kHz | 30 | 100kHz | |
| 8RDB-470K | 47±10% | 1kHz | 30 | 100kHz | |
| 8RDB-680K | 68±10% | 1kHz | 30 | 100kHz | |
| 8RDB-820K | 82±10% | 1kHz | 30 | 100kHz | |
| 8RDB-101K | 100±10% | 1kHz | 35 | 100kHz | |
| 8RDB-151M | 150±20% | 1kHz | 60 | 100kHz | |
| 8RDB-1041K | 180±10% | 1kHz | 50 | 100kHz | |
| 8RDB-1002K | 220±10% | 1kHz | 50 | 100kHz | |
| 8RDB-331K | 330±10% | 1kHz | 30 | 100kHz | |
| 8RDB-471K | 470±10% | 1kHz | 30 | 100kHz | |
| 8RDB-1044K | $820^{+20}_{-10}$ % | | 30 | 100kHz | |
| 8RDB-1034K | 4700±10% | 1kHz | 50 | 796kHz | |
| 8RDB-572K | 5600±20% | 252kHz | 65 | 252kHz | |
| 8RDB-682K | 6800±10% | 252kHz | 80 | 252kHz | |
| 8RDB-1019K | 8200±10% | 252kHz | 70 | 252kHz | |
| 8RDB-153K | 15000±10% | 79.6kHz | 70 | 79.6kHz | |

## TYPE 10RB Fixed Inductor

***Frequency Range:*** 10kHz-200kHz(1)
***Inductance Range:*** 1mH-120mH
***Temperature Coefficient:*** 1000ppm/°C, max



### *Quality Features:*

- Ideal as a choke coil. Due to its high inductance and lower frequency, it is suitable in audio processing circuits for low, high and bandpass filtering requiring high dynamic range.
- High temperature epoxy resin used to hold base and drum securely.
- Pot core provides good electromagnetic shielding for low radiated noise, making it ideal for use in applications where components are in close proximity to one another.
- Closed pot core over large wire capacity drum core design reduces magnetic reluctance and keeps the level of flux radiation to a minimum. Produces exceptionally efficient utilization (high inductance to size ratio) and Q values up to 120.
- Base is thick high temperature UL 94V-1 grade phenol to protect coil during wave soldering.
- Exclusive TOKO adjustment process is done "on line" with automatic calibrating equipment to produce a consistent inductance value, coil after coil. Final setting is then permanently held in place by a special epoxy resin to effect an environmentally sealed device.

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

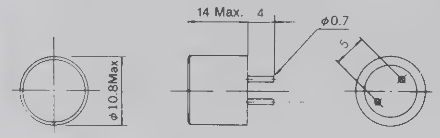
1. Frequency range applies only in circuits where Q value is a consideration. If Q is not important, such as noise filters in power supplies, then higher frequencies may be achieved.
2. Add following tolerance code to Part No.: J = ±5%, K = ±10% within ( ).
3. L measured at 1kHz by universal bridge or equivalent.
4. Q measured at 50kHz by Q meter YHP-4343B or equivalent.
5. The rated DC current is that which the inductance value decreases 10/ by the excitation DC current, measured at 1kHz by universal bridge or equivalent.
6 Self resonant frequency is for reference only.

### *TYPE 10RB*

| TOKO Part[2] Number | Inductance[3] (mH) | Q[4] (min.) | DC Resistance (Ω) max. | Rated DC Current[5] (mA) max. | Self Resonant Frequency[6] (MHz) min. |
|---|---|---|---|---|---|
| 181LY-102( ) | 1.0 | 70 | 3.4 | 90 | .80 |
| 181LY-122( ) | 1.2 | 70 | 3.7 | 75 | .80 |
| 181LY-152( ) | 1.5 | 70 | 4.0 | 70 | .80 |
| 181LY-182( ) | 1.8 | 70 | 4.5 | 65 | .80 |
| 181LY-222( ) | 2.2 | 70 | 5.2 | 60 | .75 |
| 181LY-272( ) | 2.7 | 70 | 5.8 | 55 | .75 |
| 181LY-332( ) | 3.3 | 100 | 6.1 | 50 | .70 |
| 181LY-392( ) | 3.9 | 100 | 7.2 | 45 | .65 |
| 181LY-472( ) | 4.7 | 100 | 7.5 | 40 | .60 |
| 181LY-562( ) | 5.6 | 100 | 8.4 | 40 | .55 |
| 181LY-682( ) | 6.8 | 100 | 9.7 | 35 | .50 |
| 181LY-822( ) | 8.2 | 100 | 10.4 | 30 | .45 |
| 181LY-103( ) | 10.0 | 100 | 12.1 | 25 | .40 |
| 181LY-123( ) | 12.0 | 100 | 13.0 | 25 | .35 |
| 181LY-153( ) | 15.0 | 100 | 15.0 | 20 | .35 |
| 181LY-183( ) | 18.0 | 100 | 17.0 | 22 | .30 |
| 181LY-223( ) | 22.0 | 100 | 19.5 | 21 | .30 |
| 181LY-273( ) | 27.0 | 100 | 22.0 | 18 | .25 |
| 181LY-333( ) | 33.0 | 100 | 26.0 | 17 | .25 |
| 181LY-363( ) | 36.0 | 100 | 27.0 | 16 | .20 |
| 181LY-393( ) | 39.0 | 100 | 45.0 | 15 | .20 |
| 181LY-473( ) | 47.0 | 100 | 52.0 | 13 | .20 |
| 181LY-563( ) | 56.0 | 100 | 58.0 | 12 | .20 |
| 181LY-683( ) | 68.0 | 100 | 67.0 | 11 | .17 |
| 181LY-823( ) | 82.0 | 100 | 71.0 | 10 | .15 |
| 181LY-104( ) | 100.0 | 100 | 82.0 | 9 | .14 |
| 181LY-124( ) | 120.0 | 100 | 97.0 | 8 | .12 |

## TYPE 10RBH High Inductance, High Inductance

***Frequency Range:*** 10kHz-200kHz(1)
***Inductance Range:*** 150mH-1.5H
***Temperature Coefficient:*** 1500ppm/°C, max



## *Quality Features:*

- Ideal as a choke coil. Due to its high inductance and lower frequency it is suitable for use in audio processing circuits for low, high and bandpass filtering requiring high dynamic range.
- Type 10RBM is low profile producing high inductance values and outstanding efficiency.
- High temperature epoxy resin used to hold base and drum securely.
- Pot core provides good electromagnetic shielding for low radiated noise, making it ideal for use in applications where components are in close proximity to one another.
- Closed pot core, over a large wire capacity drum core reduces magnetic reluctance and keeps the level of flux radiation to a minimum. Produces exceptional efficiency (high inductance to size ratio) and Q values up to 1.5H.
- Base is thick, high-temperature UL 94V-1 grade phenol to protect coil during wave soldering.
- Exclusive TOKO adjustment process is done "on line" with automatic calibrating equipment to produce a consistent inductance value, coil after coil. Final setting is then permanently held in place by a special epoxy resin to effect an environmentally sealed device.

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

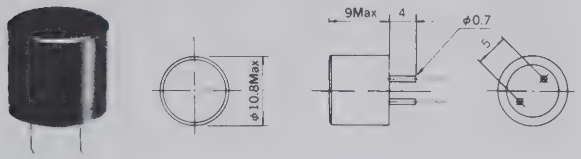
1. Frequency range applies only in circuits where Q value is a consideration. If Q is not important, such as noise filters in power supplies, then higher frequencies may be achieved.
2. Add the tolerance code to Part No.: K = ±10% M= ±20% is also available.
3. L measured at 1kHz by universal bridge or equivalent.
4. Q measured at 50 KHz by Q meter YHP-4343B or equivalent.
5. The rated DC current is that which the inducance value decreases 10% by the excitation DC current, measured at 1kHz by unviersal bridge or equivalent.
6. Self resonant frequency is for reference only.

### *TYPE 10RBH High Inductance*

| TOKO Part[2] Number | Inductance[3] (H) | Q[4] (min.) | Test Frequency (kHz) | DC Resistance (Ω) max. | Rated DC Current[5] (mA) max. | Self Resonant Frequency[6] (kHz) min. |
|---|---|---|---|---|---|---|
| 239LY-154K | 0.15 | 90 | 25.2 | 75 | 3.6 | 87 |
| 239LY-184K | 0.18 | 90 | 25.2 | 85 | 3.4 | 84 |
| 239LY-224K | 0.22 | 90 | 25.2 | 95 | 3.2 | 74 |
| 239LY-274K | 0.27 | 90 | 25.2 | 105 | 3.1 | 68 |
| 239LY-334K | 0.33 | 80 | 25.2 | 125 | 3.0 | 61 |
| 239LY-394K | 0.39 | 80 | 25.2 | 140 | 2.5 | 59 |
| 239LY-474K | 0.47 | 80 | 25.2 | 190 | 2.1 | 52 |
| 239LY-564K | 0.56 | 80 | 25.2 | 215 | 2.0 | 50 |
| 239LY-684K | 0.68 | 60 | 25.2 | 250 | 2.0 | 45 |
| 239LY-824K | 0.82 | 60 | 16.0 | 265 | 1.8 | 31 |
| 239LY-105K | 1.00 | 60 | 16.0 | 295 | 1.7 | 29 |
| 239LY-125K | 1.20 | 50 | 16.0 | 385 | 1.5 | 26 |
| 239LY-155K | 1.50 | 50 | 16.0 | 435 | 1.2 | 25 |

## TYPE 10RBM, Low Profile, High Inductance

***Frequency Range:*** 10kHz-200kHz(1)
***Inductance Range:*** 1mH-47mH
***Temperature Coefficient:*** 1000pp/°C, max



### *Quality Features:*

- Ideal as a choke coil for noise filtering. Due to its high inductance and lower frequency it is suitable for use in audio processing circuits for low, high and bandpass filtering requiring high dynamic range.
- Type 10RBM is low profile producing high inductance values and outstanding efficiency.
- High temperature epoxy resin used to hold base and drum securely.
- Pot core provides good electromagnetic shielding for low radiated noise, making it ideal for use in applications where components are in close proximity to one another.
- Closed pot core, over a large wire capacity drum core reduces magnetic reluctance and keeps the level of flux radiation to a minimum. Produces exceptional efficiency (high inductance to size ratio) and Q values up to 1.5H.
- Base is thick, high-temperature UL 94V-1 grade phenol to protect coil during wave soldering.
- Exclusive TOKO adjustment process is done "on line" with automatic calibrating equipment to produce a consistent inductance value, coil after coil. Final setting is then permanently held in place by a special epoxy resin to effect an environmentally sealed device.

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

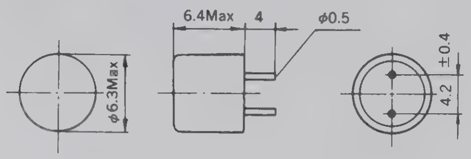
1. Frequency range applies only in circuits where Q value is a consideration. If Q is not important, such as noise filters in power supplies, then higher frequencies may be achieved.
2. Add the tolerance code to Part No.: J = ±5%, K = ±10% within ( ).
3. L measured at 1kHz by universal bridge or equivalent.
4. Q measured at 50 KHz by Q meter YHP-4343B or equivalent.
5. The rated DC current is that which the inducance value decreases 10% by the excitation DC current, measured at 1kHz by unviersal bridge or equivalent.
6. Self resonant frequency is for reference only.

### *TYPE 10RBM Low Profile, High Inductance*

| TOKO Part[2] Number | Inductance[3] (mH) | Q[4] (min.) | DC Resistance (Ω) max. | Rated DC Current[5] (mA) max. | Self Resonant Frequency[6] (MHz) min. |
|---|---|---|---|---|---|
| 265LY-102( ) | 1.0 | 40 | 4.7 | 57 | 1.6 |
| 265LY-122( ) | 1.2 | 40 | 5.1 | 50 | 1.5 |
| 265LY-152( ) | 1.5 | 45 | 5.9 | 46 | 1.3 |
| 265LY-182( ) | 1.8 | 45 | 6.6 | 41 | 1.3 |
| 265LY-222( ) | 2.2 | 50 | 7.8 | 37 | 1.1 |
| 265LY-272( ) | 2.7 | 50 | 9.0 | 34 | 1.0 |
| 265LY-332( ) | 3.3 | 50 | 10.0 | 30 | 1.0 |
| 265LY-392( ) | 3.9 | 50 | 11.5 | 28 | 0.9 |
| 265LY-472( ) | 4.7 | 50 | 12.6 | 25 | 0.8 |
| 265LY-562( ) | 5.6 | 50 | 17.2 | 23 | 0.7 |
| 265LY-682( ) | 6.8 | 50 | 19.0 | 20 | 0.7 |
| 265LY-822( ) | 8.2 | 60 | 22.0 | 18 | 0.6 |
| 265LY-103( ) | 10.0 | 60 | 25.0 | 15 | 0.5 |
| 265LY-123( ) | 12.0 | 60 | 28.0 | 14 | 0.5 |
| 265LY-153( ) | 15.0 | 60 | 33.0 | 12 | 0.4 |
| 265LY-183( ) | 18.0 | 60 | 42.0 | 11 | 0.3 |
| 265LY-223( ) | 22.0 | 70 | 48.0 | 10 | 0.3 |
| 265LY-273( ) | 27.0 | 70 | 56.0 | 10 | 0.3 |
| 265LY-333( ) | 33.0 | 70 | 64.0 | 9 | 0.2 |
| 265LY-393( ) | 39.0 | 70 | 72.0 | 8 | 0.2 |
| 265LY-473( ) | 47.0 | 70 | 82.0 | 8 | 0.2 |

## TYPE 6RA Noise Filter, for DC Line

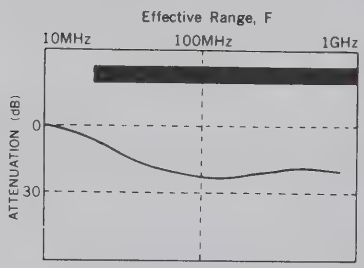
***Frequency Range:*** 100MHz-700MHz(1)
***Inductance Range:*** .18μH-1.1μH
***Temperature Coefficient:*** 500ppm/°C max



### *Quality Features:*

- The closed magnetic path design makes this an ideal choke coil for noise filtering in applications requiring relatively low inductance values, but very high (VHF) frequencies.
- Ideal for use as a noise filter because it creates self-resonant frequency with distributed capacitance, eliminating the need for an external capacitor in parallel, in many applications.
- The number of turns can be varied to produce the desired self-resonant frequency.
- For more attenuation, an external capacitor may be added, such as in a power line circuit.
- Proprietary ferrite cup core has integral ferrite center post to maximize inductance and minimize magnetic leakage.
- Coil winding is produced on Torsion machine to exacting winding spacing tolerances. Winding is held in place with specially formulated epoxy resin.
- Magnetically shielded.

*Frequency Characteristics*



## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

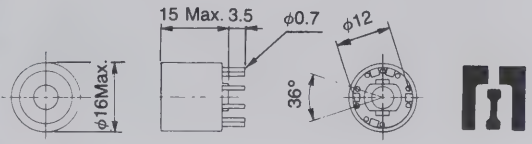
1. The rated DC current indicates the point at which the inductance value decreases by 10%.

### *TYPE 6RA*

| TOKO Part Number | Inductance (μH) | Turns | Test Frequency (kHz) | DC Resistance (Ω) Max. | Rated DC Current[1] (A Max.) | Self Resonant Frequency (MHz min) |
|---|---|---|---|---|---|---|
| 374 FRF-1003 | 1.0 ±20% | 6.5 | 10 | 0.1 | 3.0 | 200 |
| 374 FRF-1010 | 0.56±30% | 4.5 | 10 | 0.1 | 4.0 | 250 |
| 374 FRF-1011 | 1.1 ±20% | 7.5 | 10 | 0.1 | 2.5 | 150 |

## 15mm TYPE 15RSL

***Frequency Range:*** 10-200kHz
***Inductance Range:*** 0.05-25mH
***Temperature Coefficient:*** 1000ppm/°C max.



### *Quality Features:*

- Large capacity bobbin accommodates thicker AWG wires sizes to provide inductances up to 25mH and Q's of 80, typical.
- Ideal for bias OSC coil in audio circuits.
- This coil comes with 9 terminals to accomodate a transformer winding and/or tap.
- The pot core provides electromagnetic shielding for low EMI.
- Presoldered terminal pins ensure a highly reliable PWB connection.

## STANDARD COILS SELECTION GUIDE

The Part Numbers shown in the table below are standard coils, which are readily available, TOKO will design and manufacture modified and custom coils to meet your requirements. If you do not find the coil for your application, please contact our sales office or representative office.

### *TYPE 15RSL*

| TOKO Part Number | Inductance (mH) | Q (min.) | Test Frequency (kHz) |
|---|---|---|---|
| 712RSL-1313 | 0.12 ± 10% | 55 | 796 |
| 712RSL-1253 | 0.33 ± 10% | 40 | 796 |
| 712RSL-1296 | 0.50 ± 20% | 30 | 796 |
| 712RSL-1193 | 0.88 ± 10% | 95 | 252 |
| 712RSL-1295 | 1.0 ± 20% | 40 | 252 |
| 712RSL-1306 | 2.1 ± 10% | 50 | 252 |
| 712RSL-1294 | 3.0 ± 20% | 60 | 252 |
| 712RSL-1293 | 4.0 ± 20% | 60 | 252 |
| 712RSL-1298 | 5.0 ± 20% | 60 | 252 |
| 712RSL-1297 | 10.0 ± 20% | 60 | 252 |
| 712RSL-1166 | 25.0 ± 10% | 150 | 79.6 |

# MOLDED COILS

TOKO Molded Coils are manufactured utilizing the most progressive torsion winding systems and assembly equipment in the industry. TOKO engineers have designed production equipment so exacting and advanced that uniformity and reliability are assured.

Precision spring wound construction produces precise inductance, high Q, and minimal stray capacitance characteristics and offer unsurpassed stability and uniformity. Ideal for use in RF circuits, oscillator and mixer circuit, and IF circuits of communications equipment, FM radios, TV, CATV, and other circuits where top peaking is required.

Inherent to these designs are long-term dimensional stability that maintains tight tolerances for low frequency drift (±0.5% maximum).

Adjustable molded coils are used extensively in test equipment such as analyzers, signal generators and RF modulators as well as TV and FM receiver equipment as IFT, trap, oscillator, multiplier stage, matching coil of filters, mixers, RF noise filter and other similar applications.

Many TOKO molded coils are available with a tap or secondary winding to meet specific requirements.

Most of the Molded Coils in this section can be tuned quite a bit from nominal inductance value. There are restrictions to the ranges due to variations from lot to lot in core material.

TOKO can guarantee tuning ranges typically ±6% of nominal inductance, depending upon the size of the coil and application. Check the type you are interested in for exact tolerances.

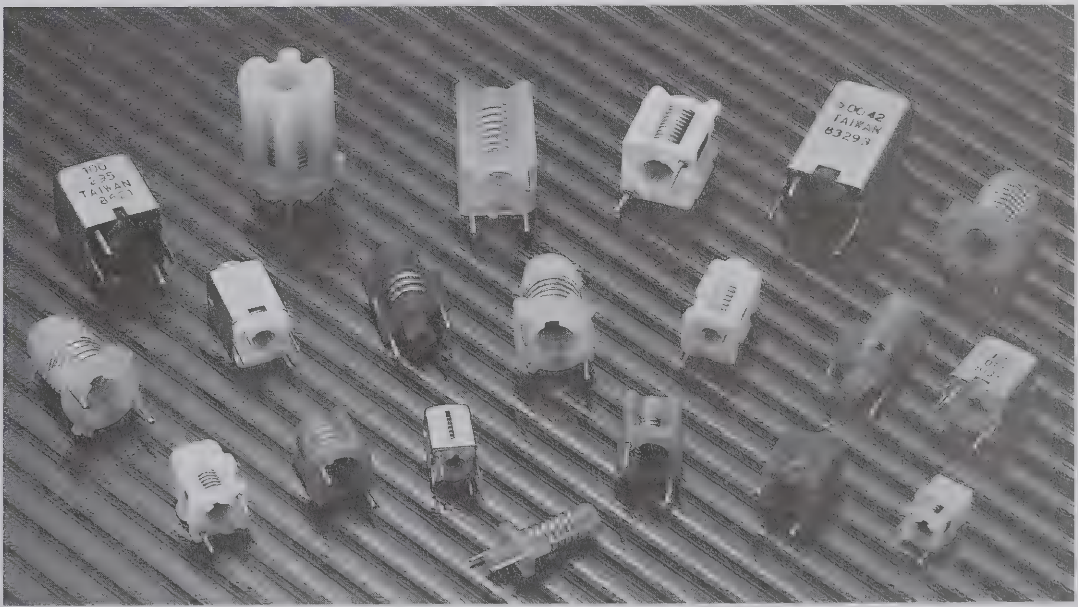
When adjusting the coil from the original specified position, please be aware that corresponding changes in temperature drift characteristics and Q will take place. If inductance is the only concern and Q characteristics are not important, then tuning to the range limits is acceptable. If temperature drift and Q characteristics are important, we suggest selecting the next higher or lower range device.

The Q and temperature coefficient can be achieved at the extremes of the adjustment ranges, but we suggest ascertaining the effects of substantial deviation from the nominal inductance value in critical applications.

Various packaging schemes are available. In addition to bulk, cartridges are available for high volume insertion equipment. Consult the specific inductor catalog pages for details.

Prototyping and experimenting kits are available for four molded types. A kit usable for RF, IF and other tuned applications. Contact the nearest TOKO AMERICA sales office for details and ordering information.

In this section, windings are referred to as "close wound" to denote an extremely close proximity between turns or "space wound" to denote a relatively large proximity between turns.



TOKO

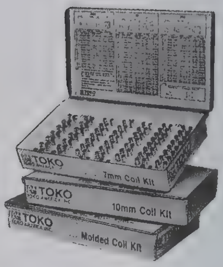
TOKO AMERICA,INC.

*1250 Feehanville Drive • Mt. Prospect, Illinois 60056 • TEL 708/297-0070 • FAX 708/699-7864*

# MOLDED COILS

## Prototyping Kits

*Prototyping and experimenting kits are available for the 7mm, 10mm, and other types. Contact the nearest TOKO AMERICA sales office for details and ordering information.*



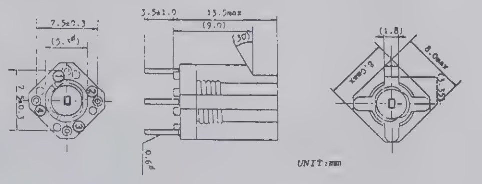
### SELECTION GUIDE TO TOKO MOLDED COILS

| Type | Size Approx. (mm) | | | Shield Plated Brass | Winding | | | Form | Inductance Range (μH) | Q@ 100MHz | Freq. Range (MHz) | Bobbin Material | Core | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | L x W x H | | | | Tap | 2nd | 3rd | | | | | | Fer. | Alum. |
| MC-111 | 8.0 | 8.0 | 13.5 | No | 2 | Yes | No | Sp/Cl | 0.03-0.50 | 130 | 150 | P.P. | Yes | Yes |
| MC-117 | 10.4 | 10.4 | 17.5 | No | 1 | No | No | Sp/Cl | 0.03-0.40 | 200 | 150 | P.P. | Yes | Yes |
| MC-119 (1) | 8.0 | 8.0 | 9.3 | No | 1 | Yes | No | Sp/Cl | 0.03-0.20 | 130 | 150 | P.P. | Yes | No |
| MC-120 (1) | 10.0 | 10.0 | 13.0 | Yes | 1 | No | No | Sp/Cl | 0.03-0.44 | 200 | 150 | P.P. | Yes | Yes |
| MC-122 (1) | 7.5 | 7.5 | 10.0 | Yes | No | No | No | Close | 0.03-0.38 | 130 | 250 | P.P. | Yes | Yes[5] |
| MC-130 | 10.0 | 10.0 | 10.0 | Yes | No | No | No | Close | 0.35-1.20 | 100 (2) | 150 | P.P. | Yes | Yes |
| MC-134 (1) | 7.3 | 7.3 | 13.0 | Yes | No | No | No | Close | 0.03-0.68 | 130 | 150 | P.P. | Yes | No |
| MC-137 | 7.8 | 7.8 | 7.8 | Yes | No | No | No | Close | 0.03-0.20 | 100 | 150 | P.P. | Yes | No |
| MC-138 | 7.4 | 7.4 | 14.0 | Yes | 1 | No | No | Space | .025-0.20 | 200 | 250 | PBTP | Yes | Yes |
| MC-139 | 5.5 | 5.5 | 8.0 | Yes | No | No | No | Space | 0.02-0.15 | 120 (3) | 250 | PBTP | Yes | Yes[5] |
| MC-141 | 5.5 | 5.5 | 8.0 | Yes | No | No | No | Close | 0.02-0.23 | 100 (3) | 250 | PBTP | Yes | Yes[5] |

1. Automatic insertion packaging available.
2. 50MHz
3. 150MHz
4. P.P. = Polypropylene
   PBTP = Polybutylene Terephthalate
5. Brass Core

## MC-111

***Close or Space Wound***
***Frequency Range:*** 30MHz-150MHz (2)
***Inductance Range:*** .03µH-0.5µH
***Temperature Coefficient:*** 150ppm/°C, max.



*Tuning Method*
*Tuning Tool: #71-1604: Ferrite*
*#71-1470: Aluminum*

## *Quality Features:*

- High Q and a wide choice of winding/tapping combinations for a variety of VHF applications.
  Single Winding: Close or Space Wound
  Double Winding: Close Wound only
  Single Space Wound with one or two taps
- Suitable for most applications in the range of 30-200MHz. Ferrites available are optimum over the 30-150MHz range. (See Note 2 regarding aluminum cores) Although designed as a low signal level coil, it is suitable for use in lower power and multiplier stages of transmitters.
- Precise winding positioning is achieved on torsion machine to exacting spec before polypropylene form is molded around it. This assures a constant winding pitch which provides outstanding uniformity in inductance, minimum stray capacitance, and optimum Q characteristics at high frequency. The MC-111 mold surrounds the winding on four sides for added stability.
- Polypropylene coil forms are designed for self-tapping by a lubricated screw core with an internally "splined" body matched to the tuning slug providing excellent torque control. By maintaining precision tolerances throughout fabrication, TOKO can guarantee the specifications for torque range. This reduces core breakage during trimming and once aligned in the circuit, TOKO coils will maintain the setting during the PCB assembly process. In extremely demanding applications, this precision eliminates the need and expense of locking screws.
- Presoldered terminal pins for reliable PCB connections.
- Winding and terminals are one integral piece, essentially eliminating "connection failures". One piece construction also makes these coils highly resistant to shock, vibration, humidity and temperature change. (±0.5% maximum frequency drift)
- Four pedestals on base assure upright positioning of the device during wave soldering.

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

1. Available with one or two taps for specific requirements you may have.
2. Alternate use of aluminum core in items listed will increase the usable frequency of any specific coil form. However, magnetic path/inductance is reduced. These cores may also be substituted for ferrite as a mean of lowering Q.
3. Inductance values for reference only.

### *TYPE MC-111*

| TOKO Part Number | Winding Primary | Winding Secondary | Color Code | Inductance³ (µH) | Q Typical | Test Frequency (MHz) | Tuning Capacitance Range (pF) |
|---|---|---|---|---|---|---|---|
| E516HNS-200057 | 3¼ | 1¼ | Orange | .08 | 133 | 100 | 32±6% |
| E516HNS-200025 | 3¼ | 2¼ | Orange | .08 | 120 | 100 | 32±6% |
| E516HNS-200026 | 3¼ | 3¼ | Orange | .08 | 115 | 100 | 32±6% |
| E516HNS-200058 | 4¼ | 1¼ | Orange | .12 | 137 | 100 | 22±6% |
| E516HNS-200027 | 4¼ | 2¼ | Orange | .12 | 115 | 100 | 22±6% |
| E516HNS-200028 | 4¼ | 3¼ | Orange | .12 | 105 | 100 | 22±6% |
| E516HNS-200059 | 5¼ | 1¼ | Orange | .16 | 128 | 100 | 16±6% |
| E516HNS-200029 | 5¼ | 2¼ | Orange | .16 | 110 | 100 | 16±6% |
| E516HNS-200030 | 5¼ | 3¼ | Orange | .16 | 105 | 100 | 16±6% |
| E516HNS-200060 | 6¼ | 1¼ | Orange | .22 | 114 | 90 | 14±6% |
| E516HNS-200031 | 6¼ | 2¼ | Orange | .22 | 105 | 90 | 14±6% |
| E516HNS-200032 | 6¼ | 3¼ | Orange | .22 | 95 | 90 | 14±6% |
| E516HNS-200061 | 7¼ | 1¼ | Orange | .30 | 95 | 80 | 13±6% |
| E516HNS-200062 | 7¼ | 2¼ | Orange | .30 | 90 | 80 | 13±6% |
| E516HNS-200063 | 8¼ | 1¼ | Orange | .36 | 100 | 80 | 11±6% |
| E516HNS-200064 | 8¼ | 2¼ | Orange | .36 | 96 | 80 | 11±6% |
| E516LNS-200065 | 3¼ | 1¼ | Orange | .08 | 113 | 58.75 | 88±8% |
| E516LNS-200033 | 3¼ | 2¼ | Orange | .08 | 110 | 58.75 | 88±6% |
| E516LNS-200034 | 3¼ | 3¼ | Orange | .08 | 100 | 58.75 | 88±6% |
| E516LNS-200066 | 4¼ | 1¼ | Orange | .12 | 115 | 58.75 | 63±6% |
| E516LNS-200035 | 4¼ | 2¼ | Orange | .12 | 110 | 58.75 | 63±6% |
| E516LNS-200036 | 4¼ | 3¼ | Orange | .12 | 100 | 58.75 | 63±6% |
| E516LNS-200067 | 5¼ | 1¼ | Orange | .16 | 112 | 58.75 | 47±6% |

*continued on next page*

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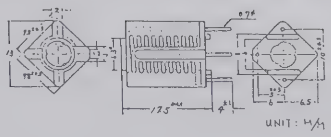
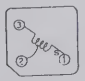
### *TYPE MC-111*

| TOKO Part Number | Winding | | Color Code | Inductance[3] (µH) | Q Typical | Test Frequency (MHz) | Tuning Capacitance Range (pF) |
|---|---|---|---|---|---|---|---|
| | Primary | Secondary | | | | | |
| E516LNS-200037 | 5¼ | 2¼ | Orange | .16 | 105 | 58.75 | 47 ± 6% |
| E516LNS-200038 | 5¼ | 3¼ | Orange | .16 | 100 | 58.75 | 47 ± 6% |
| E516LNS-200068 | 6¼ | 1¼ | Orange | .20 | 108 | 58.75 | 36 ± 6% |
| E516LNS-200039 | 6¼ | 2¼ | Orange | .20 | 105 | 58.75 | 36 ± 6% |
| E516LNS-200040 | 6¼ | 3¼ | Orange | .20 | 90 | 58.75 | 36 ± 6% |
| E516LNS-200069 | 7¼ | 1¼ | Orange | .26 | 100 | 58.75 | 28 ± 6% |
| E516LNS-200070 | 7¼ | 2¼ | Orange | .26 | 90 | 58.75 | 28 ± 6% |
| E516LNS-200071 | 8¼ | 1¼ | Orange | .35 | 90 | 58.75 | 21 ± 6% |
| E516LNS-200072 | 8¼ | 2¼ | Orange | .35 | 88 | 58.75 | 21 ± 6% |
| E516ANS-200073 | 3¼ | 1¼ | Orange | .05 | 73 | 100 | 55 ± 6% |
| E516ANS-200074 | 3¼ | 2¼ | Orange | .05 | 70 | 100 | 55 ± 6% |
| E516ANS-200075 | 3¼ | 3¼ | Orange | .05 | 70 | 100 | 55 ± 6% |
| E516ANS-200076 | 4¼ | 1¼ | Orange | .06 | 72 | 100 | 41 ± 6% |
| E516ANS-200077 | 4¼ | 2¼ | Orange | .06 | 67 | 100 | 41 ± 6% |
| E516ANS-200078 | 4¼ | 3¼ | Orange | .06 | 67 | 100 | 41 ± 6% |
| E516ANS-200079 | 5¼ | 1¼ | Orange | .08 | 67 | 100 | 32 ± 6% |
| E516ANS-200080 | 5¼ | 2¼ | Orange | .08 | 64 | 100 | 32 ± 6% |
| E516ANS-200081 | 5¼ | 3¼ | Orange | .08 | 62 | 100 | 32 ± 6% |
| E516ANS-200082 | 6¼ | 1¼ | Orange | .09 | 64 | 100 | 27 ± 6% |
| E516ANS-200083 | 6¼ | 2¼ | Orange | .09 | 64 | 100 | 27 ± 6% |
| E516ANS-200084 | 6¼ | 3¼ | Orange | .09 | 60 | 100 | 27 ± 6% |
| E516ANS-200085 | 7¼ | 1¼ | Orange | .12 | 63 | 100 | 22 ± 6% |
| E516ANS-200086 | 7¼ | 2¼ | Orange | .12 | 63 | 100 | 22 ± 6% |
| E516ANS-200087 | 8¼ | 1¼ | Orange | .14 | 65 | 100 | 18 ± 6% |
| E516ANS-200088 | 8¼ | 2¼ | Orange | .14 | 65 | 100 | 18 ± 6% |
| E516HNS-110004 | 3½ | 1¼ | Orange | .08 | 135 | 100 | 32 ± 6% |
| E516HNS-110005 | 4½ | 1¼ | Orange | .12 | 135 | 100 | 21 ± 4% |
| E516HNS-110006 | 4½ | 2¼ | Orange | .12 | 135 | 100 | 21 ± 4% |
| E516HN-110007 | 5½ | 1¼ | Orange | .17 | 135 | 100 | 15 ± 4% |
| E516HN-110008 | 5½ | 2¼ | Orange | .17 | 135 | 100 | 15 ± 4% |
| E516HN-110009 | 5½ | 3¼ | Orange | .17 | 135 | 100 | 15 ± 4% |
| E516LN-110010 | 3½ | 1¼ | Orange | .08 | 120 | 58.75 | 93 ± 6% |
| E516LN-110011 | 4½ | 1¼ | Orange | .12 | 130 | 58.75 | 63 ± 6% |
| E516LN-110012 | 4½ | 2¼ | Orange | .12 | 130 | 58.75 | 63 ± 6% |
| E516LN-110013 | 5½ | 1¼ | Orange | .16 | 135 | 58.75 | 47 ± 6% |
| E516LN-110014 | 5½ | 2¼ | Orange | .16 | 135 | 58.75 | 47 ± 4% |
| E516LN-110015 | 5½ | 3¼ | Orange | .16 | 135 | 58.75 | 47 ± 4% |
| E516AN-110016 | 3½ | 1¼ | Orange | .04 | 65 | 100 | 59 ± 6% |
| E516AN-110017 | 4½ | 1¼ | Orange | .05 | 63 | 100 | 50 ± 5% |
| E516AN-110018 | 4½ | 2¼ | Orange | .05 | 63 | 100 | 50 ± 5% |
| E516AN-110019 | 5½ | 1¼ | Orange | .06 | 60 | 100 | 41 ± 5% |
| E516AN-110020 | 5½ | 2¼ | Orange | .06 | 60 | 100 | 41 ± 4% |
| E516AN-110021 | 5½ | 3¼ | Orange | .06 | 60 | 100 | 41 ± 4% |

## MC-117

***Space Wound***
***Close Wound***
***Frequency Range:*** 30MHz-150MHz
***Inductance Range:*** 0.02μH ~ 0.40μH





### *Quality Features:*

- The MC117 is a very high stability coil, based on the dimensons of the MC120 molded coil, although being taller it is designed for a space wound coil, with an optional tap encapsulated within the molding of the coil assembly. Adjustment is possible from either end.
- The MC117 is available with an optional shielded can.
- Like all TOKO molded coils, the MC117 is protected against the effects of vibration and thermal cycling, with the core being held in such a way as to minimize the dangers of fracture during adjustment when compared to traditional types of construction.
- The MC117 series is intended for high stability applications requiring optimum Q characteristics at VHF. It is a space wound coil with hexagonal core.
- The MC117 is available only as a single winding coil, with up to one tap.

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

1. This device is available with an optional shield to permit the use of several devices in close proximity without interference and improve mounting stability. However the optional shield will reduce Q by about 20%.
2. Alternate use of aluminum core in items listed will increase the usable frequency of any specific coil form. However, magnetic path/inductance is reduced. These cores may also be substituted for ferrite as a means of lowering Q.
3. Inductance value for reference only.
4. Minimum inductance core position (12.5T to 15.5T) 2 turns off from top of bobbin or metal can.

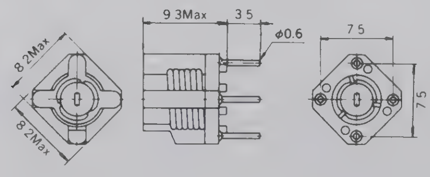
***TYPE*** ***MC-117***

| TOKO Part Number | Winding Space | Color Code | Inductance[3,4] (μH) | Q (min.) | Test Frequency (MHz) | Tuning Capacitance Range (pF) | Shielded Case |
|---|---|---|---|---|---|---|---|
| E523HN-1000029 | 1.5t | White | 0.0373μH | 156 | 100MHz | 68.0pF ± 5% | No |
| E523HN-2000052 | 2.5t | Red | 0.0667μH | 136 | 100MHz | 38.0pF ± 7% | No |
| E523HN-3000143 | 3.5t | Orange | 0.1013μH | 216 | 100MHz | 25.0pF ± 7% | No |
| E523HN-4000124 | 4.5t | Yellow | 0.1583μH | 186 | 100MHz | 16.opF ± 6% | No |
| E523HN-5000145 | 5.5t | Green | 0.2110μH | 164 | 100MHz | 12.0pF ± 6% | No |
| E523HN-6000146 | 6.5t | Blue | 0.2349μH* | 198 | 70MHz | 22.0pF ± 6% | No |
| E523HN-7000097 | 7.5t | Violet | 0.3040μH* | 192 | 70MHz | 17.0pF ± 6% | No |
| E523HN-8000169 | 8.5t | White | 0.3976μH* | 138 | 70MHz | 13.0pF ± 4% | No |
| E523AN-1000059 | 1.5t | White | 0.0325μH | 130 | 100MHz | 78.0pF ± 3% | No |
| E523AN-2000142 | 2.5t | Red | 0.0487μH | 130 | 100MHz | 52.0pF ± 3% | No |
| E523AN-3000253 | 3.5t | Orange | 0.0667μH | 135 | 100MHz | 38.0pF ± 3% | No |
| E523AN-4000194 | 4.5t | Yellow | 0.0845μH | 114 | 100MHz | 30.0pF ± 4% | No |
| E523AN-5000265 | 5.5t | Green | 0.1010μH | 125 | 100MHz | 25.0pF ± 3% | No |
| E523AN-6000286 | 6.5t | Blue | 0.1260μH** | 135 | 100MHz | 20.0pF ± 4% | No |
| E523AN-7000197 | 7.5t | Violet | 0.1490μH** | 128 | 100MHz | 17.0pF ± 4% | No |
| E523AN-8000099 | 8.5t | White | 0.1630μH** | 120 | 100MHz | 15.5pF ± 4% | No |
| E523HNA-1000049 | 1.5t | White | 0.0338μH | 70 Min. | 100MHz | 75.0pF ± 2% | Yes |
| E523HNA-2000102 | 2.5t | Red | 0.0551μH | 100 Min. | 100MHz | 46.0pF ± 4% | Yes |
| E523HNA-3000213 | 3.5t | Orange | 0.0792μH | 130 Min. | 100MHz | 32.0pF ± 6% | Yes |
| E523HNA-4000114 | 4.5t | Yellow | 0.1101μH | 110 Min. | 100MHz | 23.0pF ± 4% | Yes |
| E523HNA-5000185 | 5.5t | Green | 0.1407μH | 105 Min. | 100MHz | 18.0pF ± 6% | Yes |
| E523HNA-6000216 | 6.5t | Blue | 0.1948μH | 85 Min. | 100MHz | 13.0pF ± 6% | Yes |
| E523HNA-7000147 | 7.5t | Violet | 0.2165μH | 70 Min. | 100MHz | 11.7pF ± 6% | Yes |
| E523HNA-8000069 | 8.5t | White | 0.2265μH | 105 Min. | 100MHz | 13.8pF ± 3% | Yes |
| E523ANA-1000039 | 1.5t | White | 0.0281μH | 76 ± 20% | 100MHz | 90.0pF ± 2% | Yes |
| E523ANA-2000122 | 2.5t | Red | 0.0422μH | 85 ± 20% | 100MHz | 60.0pF ± 4% | Yes |
| E523ANA-3000203 | 3.5t | Orange | 0.0563μH | 85 ± 20% | 100MHz | 45.0pF ± 4% | Yes |
| E523ANA-4000134 | 4.5t | Yellow | 0.0724μH | 75 Min. | 100MHz | 35.0pF ± 4% | Yes |
| E523ANA-5000155 | 5.5t | Green | 0.0859μH | 75 Min. | 100MHz | 29.5pF ± 3% | Yes |
| E523ANA-6000306 | 6.5t | Blue | 0.1013μH | 105 ± 20% | 100MHz | 25.0pF ± 4% | Yes |
| E523ANA-7000137 | 7.5t | Violet | 0.1267μH | 80 Min. | 100MHz | 20.0pF ± 4% | Yes |
| E523ANA-8000019 | 8.5t | White | 0.1407μH | 80 Min. | 100MHz | 18.0pF ± 3% | Yes |

* Minimum Inductance value with core 2 turns off from bobbin top.
** Maximum Inductance value with core 2 turns off from bobbin top.

## MC-119

***Space Wound:*** 0.03μH-.08μH High Q
***Close Wound:*** 0.03μH-0.2μH Med Q
***Frequency Range:*** 30MHz-150MHz (1)
***Inductance Range:*** .03μH-.2μH
***Temperature Coefficient:*** 150ppm/°C, max.



*Tuning Method*
*Tuning Tool: #71-1604*

## *Quality Features:*

- Low profile for very thin FM radio, transceivers, paging receivers and test equipment.
- Single tap at ¼ or ¾ (45⁰ or 270⁰) position is available on space wound types.
- Suitable for most applications in the range of 30-200MHz. Ferrites available are optimum over the 30-150MHz range. For 150-500MHz, please see note regarding aluminum cores.
- Precise winding positioning is achieved on torsion machine to exacting spec before polypropylene form is molded around it. This assures a constant winding pitch which provides outstanding uniformity in inductance, minimum stray capacitance, and optimum Q characteristics at high frequency. The MC119 mold surrounds winding on four sides for added stability.
- Polypropylene coil forms are designed for self-tapping by a lubricated screw core with an internally "splined" body matched to the tuning slug providing excellent torque control. By maintaining precision tolerances throughout fabrication, TOKO can guarantee the specifications for torque range. This reduces core breakage during trimming and once aligned in the circuit, TOKO coils will maintain the setting during the PCB assembly process. In extremely demanding applications, this precision eliminates the need and expense of locking screws.
- Presoldered terminal pins for reliable PCB connections.
- Winding and terminals are one integral piece, essentially eliminating "connection failures". One piece construction also makes these coils highly resistant to shock, vibration, humidity and temperature change. (±0.5% maximum frequency drift)
- Rib length is shortened on one side to indicate the starting side of the winding and to facilitate correct positioning into PCB.

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

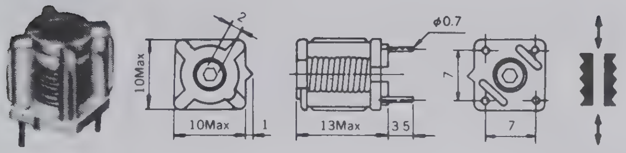
1. Alternate use of aluminum core in items listed will increase the usable frequency of any specific coil form. However, magnetic path/inductance is reduced. These cores may also be substituted for ferrite as a means of lowering Q.
2. C=Close, S=Space
3. Inductance value for reference only

### *TYPE MC-119*

| TOKO Part Number | Winding[2] | Color Code | Inductance[3] (μH) | Q (min.) | Test Frequency (MHz) | Tuning Capacitance Range (pF) |
|---|---|---|---|---|---|---|
| E525HNS-100001 | C1½ | Orange | .03 | 115 | 100 | 82±3% |
| E525HNS-100002 | C2½ | Orange | .05 | 120 | 100 | 45±4% |
| E525HNS-100003 | C3½ | Orange | .09 | 115 | 100 | 28±4% |
| E525HNS-100004 | C4½ | Orange | .14 | 105 | 100 | 18.3±3% |
| E525HNS-100005 | C5½ | Orange | .20 | 90 | 100 | 12.6±3% |
| E525HNS-100006 | C6½ | Orange | .24 | 90 | 100 | 10.8±3% |
| E525HN-100039 | S1½ | Orange | .03 | 120 | 100 | 80±4% |
| E525HN-100007 | S2½ | Orange | .05 | 135 | 100 | 48±3% |
| E525HN-100008 | S3½ | Orange | .08 | 140 | 100 | 30±2% |

## MC-120

***Space Wound:*** 0.04μH-0.21μH High Q
***Close Wound:*** 0.04μH-0.53μH Med Q
***Frequency Range:*** 30MHz-150MHz (2)
***Inductance Range:*** .03μH-.44μH
***Temperature Coefficient:*** 150ppm/°C, max.



*Tuning Method*
*Tuning Tool: #71-0457*
*(Hexagonal)*

### *Quality Features:*

- Popular low profile for applications limited to 13mm high devices.
- Optional tap encapsulated within molding is available.
- Suitable for most applications in the range of 30-200MHz. Ferrites available are optimum over the 30-150MHz range. For 200-500MHz, please see note regarding aluminum cores.
- Precise winding positioning is achieved on torsion machine to exacting spec before polypropylene form is molded around it. This assures a constant winding pitch which provides outstanding uniformity in inductance, minimum stray capacitance, and optimum Q charactistics at high frequency. The MC120 mold surrounds winding on four sides for added stability.
- Polypropylene coil forms are designed for self-tapping by a lubricated screw core with an internally "splined" body matched to the tuning slug providing excellent torque control. By maintaining precision tolerances throughout fabrication, TOKO can guarantee the specifications for torque range. This reduces core breakage during trimming and once aligned in the circuit, TOKO coils will maintain the setting during the PCB assembly process. In extremely demanding applications, this precision eliminates the need and expense of locking screws.
- Presoldered terminal pins for reliable PCB connections.
- Winding and terminals are one integral piece, essentially eliminating "connection failures". One piece construction also makes these coils highly resistant to shock, vibration, humidity and temperature change. (±0.5% maximum frequency drift)
- A location tab is provided on one side to indicate the starting side of the winding and to facilitate correct positioning into PCB.
- EIA color code for turns identification.

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

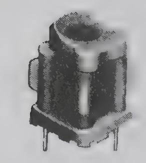
1. This device is available with an optional shield to permit the use of several devices in close proximity without interference and improve mounting stability. However the optional shield will reduce Q by about 20%.
2. Alternate use of aluminum core in items listed will increase the usable frequency of any specific coil form. However, magnetic path/inductance is reduced. These cores may also be substituted for ferrite as a means of lowering Q.
3. C=Close, S=Space
4. Minimum Inductance value with core 2 turns off from top of can or bobbin.
5. Inductance value for reference only

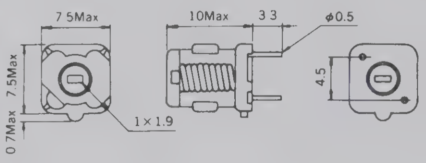
### *TYPE MC-120*

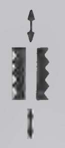
| TOKO Part Number | Winding[3] | Color Code | Inductance[4,5] (μH) | Q (min.) | Test Frequency (MHz) | Tuning Capacitance Range (pF) | Shielded Case |
|---|---|---|---|---|---|---|---|
| E526HNA-100294 | C1½ | Brown | .04 | 80 | 100 | 64.5±2% | Yes |
| E526HNA-100295 | C2½ | Red | .06 | 90 | 100 | 39.0±3% | Yes |
| E526HNA-100296 | C3½ | Orange | .09 | 100 | 100 | 25.5±3% | Yes |
| E526HNA-100297 | C4½ | Yellow | .14 | 100 | 100 | 18.0±3% | Yes |
| E526HNA-100298 | C5½ | Green | .17 | 80 | 50 | 60.0±3% | Yes |
| E526HNA-100299 | C6½ | Blue | .21 | 80 | 50 | 48.0±3% | Yes |
| E526HNA-100300 | C7½ | Violet | .24 | 80 | 50 | 42.0±3% | Yes |
| E526HNA-100301 | C8½ | Gray | .28 | 80 | 50 | 35.0±3% | Yes |
| E526HNA-100079 | C9½ | White | .33 | 80 | 50 | 30.0±3% | Yes |
| E526HN-100302 | C1½ | Brown | .04 | 120 | 100 | 55.0±3% | No |
| E526HN-100303 | C2½ | Red | .08 | 130 | 100 | 30.0±3% | No |
| E526HN-100304 | C3½ | Orange | .13 | 130 | 100 | 19.5±3% | No |
| E526HN-100305 | C4½ | Yellow | .19 | 140 | 100 | 13.0±3% | No |
| E526HN-100306 | C5½ | Green | .24 | 100 | 50 | 42.0±3% | No |
| E526HN-100307 | C6½ | Blue | .31 | 100 | 50 | 32.0±3% | No |
| E526HN-100308 | C7½ | Violet | .35 | 100 | 50 | 28.5±3% | No |
| E526HN-100309 | C8½ | Gray | .44 | 100 | 50 | 23.0±3% | No |
| E526HN-100109 | C9½ | White | .53 | 100 | 50 | 19.0±2% | No |
| E526HNA-100310 | S1½ | Brown | .03 | 80 | 100 | 69.0±2% | Yes |
| E526HNA-100311 | S2½ | Red | .05 | 90 | 100 | 43.5±3% | Yes |
| E526HNA-100312 | S3½ | Orange | .08 | 110 | 100 | 30.0±3% | Yes |
| E526HNA-100313 | S4½ | Yellow | .10 | 110 | 100 | 23.5±3% | Yes |
| E526HNA-100314 | S5½ | Green | .13 | 110 | 100 | 18.5±2% | Yes |
| E526HN-100315 | S1½ | Brown | .04 | 100 | 100 | 58.0±3% | No |
| E526HN-100316 | S2½ | Red | .07 | 150 | 100 | 34.0±3% | No |
| E526HN-100317 | S3½ | Orange | .11 | 170 | 100 | 21.5±3% | No |
| E526HN-100318 | S4½ | Yellow | .15 | 180 | 100 | 16.5±3% | No |
| E526HN-100319 | S5½ | Green | .21 | 190 | 100 | 12.0±3% | No |

## MC-122

*Close Wound*
***Frequency Range:*** 30MHz-250MHz (2)
***Inductance Range:*** .03μH-.45μH
***Temperature Coefficient:*** 150ppm/°C, max.







*Tuning Method*
*Tuning Tool: #71-1325*

## Quality Features:

- Popular low profile for applications requiring 10mm high maximum devices. Designed to accommodate a single close winding without a tap.
- Suitable for most applications in the range of 30-300MHz. Ferrites available are optimum over the 30-250MHz range. For 200-500MHz, please see note regarding brass cores.
- Precise winding positioning is achieved on torsion machine to exacting spec before polypropylene form is molded around it. This assures a constant winding pitch which provides outstanding uniformity in inductance, minimum stray capacitance, and optimum Q characteristics at high frequency. The MC122 mold surrounds winding on four sides for added stability.
- Polypropylene coil forms are designed for self-tapping by a lubricated screw core with an internally "splined" body matched to the tuning slug providing excellent torque control. By maintaining precision tolerances throughout fabrication, TOKO can guarantee the specifications for torque range. This reduces core breakage during trimming and once aligned in the circuit, TOKO coils will maintain the setting during the PCB assembly process. In extremely demanding applications, this precision eliminates the need and expense of locking screws.
- Presoldered terminal pins for reliable PCB connections.
- Winding and terminals are one integral piece, essentially eliminating "connection failures". One piece construction also makes these coils highly resistant to shock, vibration, humidity and temperature change. (± 0.5% maximum frequency drift)
- A location tab is provided on one side to indicate the starting side of the winding and to facilitate correct positioning into PCB.
- Color code for turns identification.

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

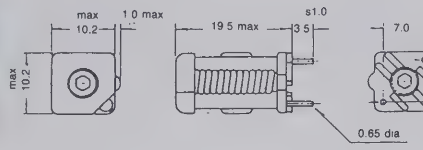
1. This device is available with an optional shield to permit the use of several devices in close proximity without interference and improve mounting stability. However the optional shield will reduce Q by about 20%.
2. Alternate use of brass core in items listed will increase the usable frequency of any specific coil form. However, magnetic path/inductance is reduced. These cores may also be substituted for ferrite as a means of lowering Q.
3. Max freq. E528DN . . . 80MHz. E528SN . . . 120MHz.
4. Inductance values for reference only.
5. C max. core position . . . 2 turns off from top of CAN or bobbin.

### TYPE MC-122

| TOKO Part[3] Number | Winding | Color Code | Inductance[4,5] (μH) | Q (min.) | Test Frequency (MHz) | Tuning Capacitance Range (pF) | Shielded Case |
|---|---|---|---|---|---|---|---|
| E528SNAS-100072 | 1½ | White | .03 | 60 | 100 | 78.5 ± 3% | Yes |
| E528SNAS-100073 | 2½ | Red | .05 | 80 | 100 | 48.5 ± 4% | Yes |
| E528SNAS-100074 | 3½ | Orange | .08 | 90 | 100 | 32.5 ± 6% | Yes |
| E528SNAS-100075 | 4½ | Yellow | .10 | 90 | 100 | 23.5 ± 6% | Yes |
| E528SNAS-100076 | 5½ | Green | .15 | 90 | 100 | 17.0 ± 6% | Yes |
| E528DNAS-100077 | 3½ | Orange | .08 | 70 | 57 | 100 ± 6% | Yes |
| E528DNAS-100078 | 4½ | Yellow | .10 | 70 | 57 | 76.0 ± 6% | Yes |
| E528DNAS-100079 | 5½ | Green | .13 | 70 | 57 | 59.0 ± 6% | Yes |
| E528DNAS-100080 | 6½ | Blue | .16 | 70 | 57 | 49.0 ± 6% | Yes |
| E528DNAS-100081 | 7½ | Violet | .20 | 70 | 57 | 38.5 ± 6% | Yes |
| E528DNAS-100082 | 8½ | White | .23 | 60 | 45 | 55.5 ± 8%[5] | Yes |
| E528DNAS-100083 | 9½ | Red | .25 | 60 | 45 | 50.0 ± 8%[5] | Yes |
| E528DNAS-100084 | 10½ | Orange | .29 | 60 | 45 | 43.0 ± 6%[5] | Yes |
| E528SN-100059 | 1½ | White | .03 | 90 | 100 | 72.0 ± 3% | No |
| E528SN-100060 | 2½ | Red | .06 | 110 | 100 | 42.0 ± 6% | No |
| E528SN-100061 | 3½ | Orange | .10 | 120 | 100 | 26.5 ± 8% | No |
| E528SN-100062 | 4½ | Yellow | .14 | 120 | 100 | 18.5 ± 8% | No |
| E528SN-100063 | 5½ | Green | .20 | 110 | 100 | 13.0 ± 8% | No |
| E528DN-100064 | 3½ | Orange | .09 | 100 | 57 | 85.8 ± 8% | No |
| E528DN-100065 | 4½ | Yellow | .13 | 100 | 57 | 60.0 ± 8% | No |
| E528DN-100066 | 5½ | Green | .17 | 100 | 57 | 44.0 ± 8% | No |
| E528DN-100067 | 6½ | Blue | .21 | 100 | 57 | 36.5 ± 8% | No |
| E528DN-100068 | 7½ | Violet | .29 | 90 | 57 | 27.0 ± 6% | No |
| E528DN-100069 | 8½ | White | .31 | 80 | 45 | 39.5 ± 6%[5] | No |
| E528DN-100070 | 9½ | Red | .38 | 80 | 45 | 33.0 ± 6%[5] | No |
| E528DN-100071 | 10½ | Orange | .45 | 70 | 45 | 28.0 ± 5%[5] | No |

## MC-130

*Close Wound*
***Frequency Range:*** 30MHz-150MHz (2)
***Inductance Range:*** .35μH-1.2μH
***Temperature Coefficient:*** 150ppm/°C, max.



*Tuning Method*
*Tuning Tool: #71-0457*
*(Hexagonal)*

### *Quality Features:*

- Suitable for most applications in the range of 30-200MHz. Ferrites available are optimum over the 30-150MHz range. For 200-500MHz, please see note regarding aluminum cores.
- Precise winding positioning is achieved on torsion machine to exacting spec before polypropylene form is molded around it. This assures a constant winding pitch which provides outstanding uniformity in inductance, minimum stray capacitance, and optimum Q characteristics at high frequency. The MC130 mold surrounds winding on four sides for added stability.
- Polypropylene coil forms are designed for self-tapping by a lubricated screw core with an internally "splined" body matched to the tuning slug providing excellent torque control. By maintaining precision tolerances throughout fabrication, TOKO can guarantee the specifications for torque range. This reduces core breakage during trimming and once aligned in the circuit, TOKO coils will maintain the setting during the PCB assembly process. In extremely demanding applications, this precision eliminates the need and expense of locking screws.
- Presoldered terminal pins for reliable PCB connections.
- Winding and terminals are one integral piece, essentially eliminating "connection failures". One piece construction also makes these coils highly resistant to shock, vibration, humidity and temperature change. (±0.5% maximum frequency drift)
- A location tab is provided on one side to indicate the starting side of the winding and to facilitate correct positioning into PCB.
- Color code for turns identification.

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

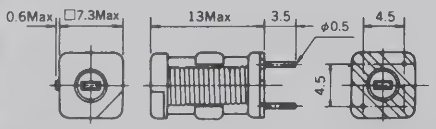
1. This device is available with an optional shield to permit the use of several devices in close proximity without interference and improve mounting stability. However the optional shield will reduce Q by about 20%. Oversized shields which minimize Q loss are available under certain conditions. (F15 Type shield, furnished separately)
2. Alternate use of aluminum core in items listed will increase the usable frequency of any specific coil form. However, magnetic path/inductance is reduced. These cores may also be substituted for ferrite as a means of lowering Q.

### *TYPE MC-130*

| TOKO Part Number | Winding (Close) | Color Code | Inductance (μH) | Q Typical | Test Frequency (MHz) | Tuning Capacitance Range (pF) | Shielded Case |
|---|---|---|---|---|---|---|---|
| E536HNAS-60039 | 9½ | White | 0.35 | 105 | 50 | 28.5 ± 10% | Yes |
| E536HNAS-60040 | 10½ | Black | 0.40 | 105 | 50 | 25.5 ± 10% | Yes |
| E536HNAS-60041 | 11½ | Brown | 0.45 | 100 | 50 | 22.5 ± 10% | Yes |
| E536HNAS-60042 | 12½ | Red | 0.50 | 100 | 50 | 20.5 ± 10% | Yes |
| E536HNAS-60043 | 13½ | Orange | 0.55 | 100 | 45 | 22.5 ± 10% | Yes |
| E536HNAS-60044 | 14½ | Yellow | 0.60 | 100 | 45 | 21.0 ± 10% | Yes |
| E536HNAS-60045 | 15½ | Green | 0.65 | 100 | 45 | 19.5 ± 10% | Yes |
| E536HNAS-60046 | 16½ | Blue | 0.70 | 90 | 45 | 18.0 ± 8% | Yes |
| E536HNAS-60047 | 17½ | Violet | 0.75 | 90 | 40 | 21.5 ± 6% | Yes |
| E536HN-60059 | 9½ | White | 0.52 | 130 | 50 | 19.5 ± 10% | No |
| E536HN-60060 | 10½ | Black | 0.60 | 125 | 50 | 17.0 ± 10% | No |
| E536HN-60061 | 11½ | Brown | 0.67 | 120 | 50 | 15.0 ± 10% | No |
| E536HN-60062 | 12½ | Red | 0.75 | 115 | 50 | 13.5 ± 10% | No |
| E536HN-60063 | 13½ | Orange | 0.86 | 115 | 45 | 14.5 ± 10% | No |
| E536HN-60064 | 14½ | Yellow | 0.90 | 115 | 45 | 14.0 ± 10% | No |
| E536HN-60065 | 15½ | Green | 1.00 | 115 | 45 | 12.5 ± 10% | No |
| E536HN-60066 | 16½ | Blue | 1.15 | 100 | 45 | 11.0 ± 10% | No |
| E536HN-60067 | 17½ | Violet | 1.20 | 110 | 40 | 13.5 ± 10% | No |

## MC-134

***Close Wound***
***Frequency Range:*** 30MHz-150MHz (2)
***Inductance Range:*** .03μH-.68μH
***Temperature Coefficient:*** 150ppm/°C, max.



*Tuning Method*
*Tuning Tool: #71-1325*

## *Quality Features:*

- Similar to MC122. A single close winding without a tap. Larger coil form achieves higher inductances.
- Suitable for most applications in the range of 30-200MHz. Ferrites available are optimum over the 30-150MHz range. For 200-500MHz, please see note regarding aluminum cores.
- Precise winding positioning is achieved on torsion machine to exacting spec before polypropylene form is molded around it. This assures a constant winding pitch which provides outstanding uniformity in inductance, minimum stray capacitance, and optimum Q characteristics at high frequency. The MC-134 mold surrounds the winding on four sides for added stability.
- Polypropylene coil forms are designed for self-tapping by a lubricated screw core with an internally "splined" body matched to the tuning slug providing excellent torque control. By maintaining precision tolerances throughout fabrication, TOKO can guarantee the specifications for torque range. This reduces core breakage during trimming and once aligned in the circuit, TOKO coils will maintain the setting during the PCB assembly process. In extremely demanding applications, this precision eliminates the need and expense of locking screws.
- Presoldered terminal pins for reliable PCB connections.
- Winding and terminals are one integral piece, essentially eliminating "connection failures". One piece construction also makes these coils highly resistant to shock, vibration, humidity and temperature change. (±0.5% maximum frequency drift)
- A location tab is provided on one side to indicate ending side of winding and to facilitate correction positioning into PCB.
- EIA color code for turns identification.

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

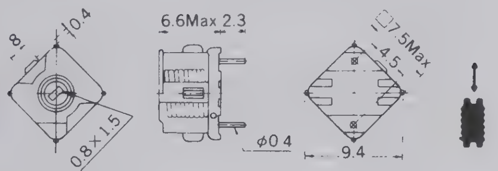
1. This device is available with an optional shield to permit the use of several devices in close proximity without interference and improve mounting stability. However the optional shield will reduce Q by about 20%.
2. Alternate use of aluminum core in items listed will increase the usable frequency of any specific coil form. However, magnetic path/inductance is reduced. These cores may also be substituted for ferrite as a means of lowering Q.
3. Inductance value for reference only.
4. Minimum inductance core position (12.5T to 15.5T) 2 turns off from top of bobbin or metal can.

### *TYPE MC-134*

| TOKO Part Number | Winding (Close) | Color Code | Inductance[3,4] (μH) | Q (min.) | Test Frequency (MHz) | Tuning Capacitance Range (pF) | Shielded Case |
|---|---|---|---|---|---|---|---|
| E540SNAS-01002 | 1½ | Brown | .03 | 60 | 100 | 83.5 ± 3% | Yes |
| E540SNAS-02002 | 2½ | Red | .05 | 60 | 100 | 51.0 ± 5% | Yes |
| E540SNAS-03002 | 3½ | Orange | .07 | 70 | 100 | 34.8 ± 8% | Yes |
| E540SNAS-04005 | 4½ | Yellow | .10 | 70 | 100 | 25.0 ± 8% | Yes |
| E540SNAS-05002 | 5½ | Green | .13 | 70 | 100 | 19.5 ± 8% | Yes |
| E540SNAS-06002 | 6½ | Blue | .16 | 70 | 100 | 15.5 ± 8% | Yes |
| E540SNAS-07005 | 7½ | Violet | .19 | 70 | 80 | 21.0 ± 8% | Yes |
| E540SNAS-08002 | 8½ | Gray | .22 | 70 | 80 | 18.0 ± 8% | Yes |
| E540SNAS-09003 | 9½ | White | .25 | 70 | 80 | 15.6 ± 8% | Yes |
| E540SNAS-10005 | 10½ | Black | .26 | 50 | 50 | 39.0 ± 8% | Yes |
| E540SNAS-11003 | 11½ | Brown | .29 | 50 | 50 | 34.5 ± 7% | Yes |
| E540SNAS-12003 | 12½ | Red | .31 | 60 | 50 | 32.0 ± 8% | Yes |
| E540SNAS-13003 | 13½ | Orange | .35 | 60 | 50 | 29.0 ± 8% | Yes |
| E540SNAS-14002 | 14½ | Yellow | .38 | 60 | 50 | 26.5 ± 7% | Yes |
| E540SNAS-15002 | 15½ | Green | .42 | 55 | 50 | 24.0 ± 5% | Yes |
| E540SN-01001 | 1½ | Brown | .03 | 80 | 100 | 76.0 ± 6% | No |
| E540SN-02001 | 2½ | Red | .06 | 85 | 100 | 43.0 ± 9% | No |
| E540SN-03001 | 3½ | Orange | .09 | 90 | 100 | 27.0 ± 10% | No |
| E540SN-04004 | 4½ | Yellow | .13 | 90 | 100 | 18.8 ± 10% | No |
| E540SN-05001 | 5½ | Green | .18 | 90 | 100 | 14.0 ± 10% | No |
| E540SN-06001 | 6½ | Blue | .23 | 90 | 100 | 11.0 ± 10% | No |
| E540SN-07004 | 7½ | Violet | .27 | 90 | 80 | 14.5 ± 10% | No |
| E540SN-08001 | 8½ | Gray | .32 | 90 | 80 | 12.5 ± 10% | No |
| E540SN-09002 | 9½ | White | .38 | 90 | 80 | 10.3 ± 10% | No |
| E540SN-10004 | 10½ | Black | .39 | 80 | 50 | 25.5 ± 10% | No |
| E540SN-11002 | 11½ | Brown | .45 | 80 | 50 | 22.5 ± 8% | No |
| E540SN-12002 | 12½ | Red | .48 | 80 | 50 | 21.0 ± 10% | No |
| E540SN-13002 | 13½ | Orange | .54 | 80 | 50 | 18.6 ± 10% | No |
| E540SN-14001 | 14½ | Yellow | .60 | 80 | 50 | 16.8 ± 8% | No |
| E540SN-15001 | 15½ | Green | .68 | 80 | 50 | 14.8 ± 7% | No |

## MC-137

***Close Wound***
***Frequency Range:*** 30MHz-150MHz (2)
***Inductance Range:*** .03μH-.2μH
***Temperature Coefficient:*** 150ppm/°C, max.



*Tuning Method*
*Tuning Tool: #71-1287*

## Quality Features:

- Very low profile (6.9mm) for tight spaces. Form is designed to accommodate a single close winding without a tap.
- Suitable for most applications in the range of 30-200MHz. Ferrites available are optimum over the 30-150MHz range. For 200-500MHz, please see note regarding aluminum cores.
- Precise winding positioning is achieved on torsion machine to exacting spec before polypropylene form is molded around it. This assures a constant winding pitch which provides outstanding uniformity in inductance, minimum stray capacitance, and optimum Q characteristics at high frequency. The MC-137 mold surrounds winding on 4 sides for added stability.
- Polypropylene coil forms are designed for self-tapping by a lubricated screw core with an internally "splined" body matched to the tuning slug providing excellent torque control. By maintaining precision tolerances throughout fabrication, TOKO can guarantee the specifications for torque range. This reduces core breakage during trimming and once aligned in the circuit, TOKO coils will maintain the setting during the PCB assembly process. In extremely demanding applications, this precision eliminates the need and expense of locking screws.
- Presoldered terminal pins for reliable PCB connections.
- Winding and terminals are one integral piece, essentially eliminating "connection failures". One piece construction also makes these coils highly resistant to shock, vibration, humidity and temperature change. (±0.5% maximum frequency drift)
- A location tab is provided on one side to indicate ending side of winding and to facilitate correction positioning into PCB.
- Color code for turns identification.

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

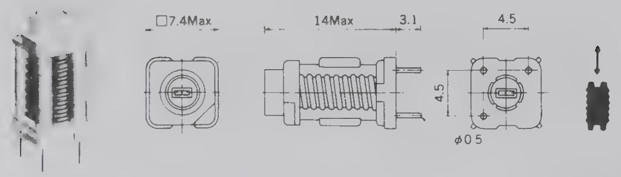
1. This device is available with an optional shield to permit the use of several devices in close proximity without interference and improve mounting stability. However the optional shield will reduce Q by about 20%.
2. Alternate use of aluminum core in items listed will increase the usable frequency of any specific coil form. However, magnetic path/inductance is reduced. These cores may also be substituted for ferrite as a means of lowering Q.
3. Measured by VHF Q Meter MQ-170D Meguro Denpa

### TYPE MC-137

| TOKO Part Number | Winding (Close) | Color Code | Inductance[3] (μH) | Q (min.) | Test Frequency (MHz) | Tuning Capacitance Range (pF) | Shielded Case |
|---|---|---|---|---|---|---|---|
| E543SNAS-01009 | 1½ | White | .031 | 55 | 100 | 83.0±2% | Yes |
| E543SNAS-02010 | 2½ | Red | .051 | 65 | 100 | 49.5±3% | Yes |
| E543SNAS-03015 | 3½ | Orange | .079 | 70 | 100 | 32.0±3% | Yes |
| E543SNAS-04011 | 4½ | Yellow | .112 | 70 | 100 | 22.6±3% | Yes |
| E543SNAS-05012 | 5½ | Green | .152 | 70 | 100 | 16.7±3% | Yes |
| E543SNAS-06013 | 6½ | Blue | .195 | 70 | 100 | 13.0±3% | Yes |

## MC-138

*Space Wound*
***Frequency Range:*** 30MHz-250MHz (2)
***Inductance Range:*** .03µH-0.2µH
***Temperature Coefficient:*** 150ppm/°C, max.



*Tuning Method*
*Tuning Tool: #71-1287*

## *Quality Features:*

- Similar to MC122 except that form is designed to accommodate a single space wound coil with tap to achieve higher inductance values.
- Suitable for most applications in the range of 30-300MHz. Ferrites available are optimum over the 30-150MHz range. For 200-500MHz, please see note regarding aluminum cores.
- Precise winding positioning is achieved on torsion machine to exacting spec before polypropylene form is molded around it. This assures a constant winding pitch which provides outstanding uniformity in inductance, minimum stray capacitance, and optimum Q characteristics at high frequency. The MC138 mold surrounds winding on four sides for added stability.
- Polybutylene terephthalate coil forms are designed for self-tapping by a lubricated screw core with an internally "splined" body matched to the tuning slug providing excellent torque control. By maintaining precision tolerances throughout fabrication, TOKO can guarantee the specifications for torque range. This reduces core breakage during trimming and once aligned in the circuit, TOKO coils will maintain the setting during the PCB assembly process. In extremely demanding applications, this precision eliminates the need and expense of locking screws.
- Presoldered terminal pins for reliable PCB connections.
- Winding and terminals are one integral piece, essentially eliminating "connection failures". One piece construction also makes these coils highly resistant to shock, vibration, humidity and temperature change. (± 0.5 maximum frequency drift)
- A location tab is provided on one side to indicate the starting side of the winding and to facilitate correct positioning into PCB.
- EIA color code for turns identification.

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

1. This device is available with an optional shield to permit the use of several devices in close proximity without interference and improve mounting stability. However the optional shield will reduce Q by about 20%.
2. Alternate use of aluminum core in items listed will increase the usable frequency of any specific coil form. However, magnetic path/inductance is reduced. These cores may also be substituted for ferrite as a means of lowering Q.
3. Inductance value for reference only.
4. Tuning slit — Ferrite: Captive slot/Aluminum: Square hole through 1.1mm sq)
5. Tuning driver — Ferrite: Stock #71-1287/Aluminum: #71-1469

### *TYPE MC-138*

| TOKO Part Number | Winding (Space) | Color Code | Inductance³ (µH) | Q (min.) | Test Frequency (MHz) | Tuning Capacitance Range (pF) | Shielded Case |
|---|---|---|---|---|---|---|---|
| Aluminum Core | | | | | | | |
| E544ANAS-100031 | 1½ | White | .027 | 70 | 100 | 93.5 ± 1% | Yes |
| E544ANAS-100032 | 2½ | Red | .037 | 70 | 100 | 68.0 ± 2% | Yes |
| E544ANAS-100033 | 3½ | Orange | .048 | 70 | 100 | 52.3 ± 3% | Yes |
| E544ANAS-100034 | 4½ | Yellow | .061 | 70 | 100 | 41.5 ± 5% | Yes |
| E544ANAS-100035 | 5½ | Green | .074 | 70 | 100 | 34.0 ± 5% | Yes |
| E544ANAS-100036 | 6½ | Blue | .087 | 70 | 100 | 28.9 ± 5% | Yes |
| E544ANAS-100037 | 7½ | Violet | .102 | 70 | 100 | 24.7 ± 5% | Yes |
| E544ANAS-100038 | 8½ | Gray | .117 | 70 | 100 | 21.6 ± 4% | Yes |
| E544AN-100041 | 1½ | White | .028 | 70 | 100 | 88.1 ± 1% | No |
| E544AN-100042 | 2½ | Red | .042 | 80 | 100 | 60.0 ± 4% | No |
| E544AN-100043 | 3½ | Orange | .056 | 80 | 100 | 45.0 ± 6% | No |
| E544AN-100044 | 4½ | Yellow | .072 | 80 | 100 | 35.0 ± 8% | No |
| E544AN-100045 | 5½ | Green | .089 | 80 | 100 | 28.2 ± 8% | No |
| E544AN-100046 | 6½ | Blue | .108 | 80 | 100 | 23.3 ± 8% | No |
| E544AN-100047 | 7½ | Violet | .122 | 75 | 100 | 20.7 ± 4% | No |
| E544AN-100048 | 8½ | Gray | .147 | 75 | 100 | 17.2 ± 4% | No |

*continued on next page*

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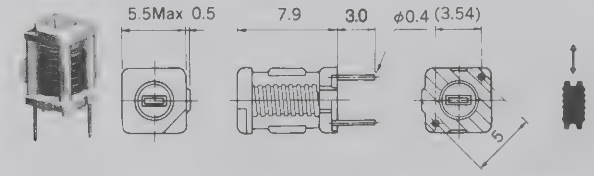
## *TYPE MC-138*

| TOKO Part Number | Winding (Space) | Color Code | Inductance[3] (µH) | Q (min.) | Test Frequency (MHz) | Tuning Capacitance Range (pF) | Shielded Case |
|---|---|---|---|---|---|---|---|
| Ferrite core (30-200MHz) | | | | | | | |
| E544ENAS-100011 | 1½ | White | .030 | 80 | 100 | 84.8 ± 2% | Yes |
| E544ENAS-100012 | 2½ | Red | .044 | 80 | 100 | 57.3 ± 5% | Yes |
| E544ENAS-100013 | 3½ | Orange | .060 | 80 | 100 | 41.7 ± 6% | Yes |
| E544ENAS-100014 | 4½ | Yellow | .078 | 80 | 100 | 32.5 ± 6% | Yes |
| E544ENAS-100015 | 5½ | Green | .096 | 80 | 100 | 26.2 ± 7% | Yes |
| E544ENAS-100016 | 6½ | Blue | .120 | 80 | 100 | 21.7 ± 7% | Yes |
| E544ENAS-100017 | 7½ | Violet | .140 | 80 | 100 | 18.5 ± 7% | Yes |
| E544ENAS-100018 | 8½ | Gray | .160 | 80 | 100 | 15.8 ± 6% | Yes |
| E544EN-100021 | 1½ | White | .031 | 90 | 100 | 76.5 ± 5% | No |
| E544EN-100022 | 2½ | Red | .053 | 110 | 100 | 47.3 ± 8% | No |
| E544EN-100023 | 3½ | Orange | .077 | 125 | 100 | 32.8 ± 12% | No |
| E544EN-100024 | 4½ | Yellow | .104 | 130 | 100 | 24.2 ± 12% | No |
| E544EN-100025 | 5½ | Green | .135 | 130 | 100 | 18.7 ± 12% | No |
| E544EN-100026 | 6½ | Blue | .160 | 130 | 100 | 15.2 ± 12% | No |
| E544EN-100027 | 7½ | Violet | .200 | 130 | 100 | 12.5 ± 12% | No |
| E544EN-100028 | 8½ | Gray | .240 | 130 | 100 | 10.4 ± 10% | No |

## MC-139

***Space Wound***
***Frequency Range:*** 30MHz-250MHz (2)
***Inductance Range:*** .012μH-0.15μH
***Temperature Coefficient:*** 150ppm/°C, max.



*Tuning Method*
*Tuning Tool: #71-1504*

## Quality Features:

- Ultra compact molded coil for RF stage in pager and small sized telecommunications equipment. Low profile (8mm).
- Molded of high temperature PBTP to withstand the heat absorbed during soldering.
- Suitable for most applications in the range of 30-300MHz. Ferrites available are optimum over the 30-250MHz range. For 250-500MHz, please see note regarding brass cores.
- Precise winding positioning is achieved on torsion machine to exacting spec before PBTP form is molded around it. This assures a constant winding pitch which provides outstanding uniformity in inductance, minimum stray capacitance, and optimum Q characteristics at high frequency. The MC139 mold surrounds winding on four sides for added stability.
- PBTP coil forms are designed for self-tapping by a lubricated screw core with an internally "splined" body matched to the tuning slug providing excellent torque control. By maintaining precision tolerances throughout fabrication, TOKO can guarantee the specifications for torque range. This reduces core breakage during trimming and once aligned in the circuit, TOKO coils will maintain the setting during the PCB assembly process. In extremely demanding applications, this precision eliminates the need and expense of locking screws.
- Presoldered terminal pins for reliable PCB connections.
- Winding and terminals are one integral piece, essentially eliminating "connection failures". One piece construction also makes these coils highly resistant to shock, vibration, humidity and temperature change. (±0.5% maximum frequency drift)
- A location tab is provided on one side to indicate the starting side of the winding and to facilitate correction positioning into PCB.
- Color code for turns identification.

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

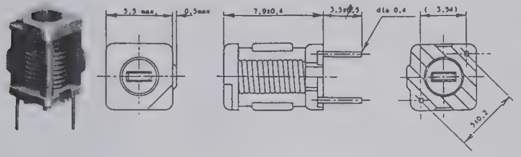
1. This device is available with an optional shield to permit the use of several devices in close proximity without interference and improve mounting stability. However the optional shield will reduce Q by about 20%.
2. Alternate use of brass core in items listed will increase the usable frequency of any specific coil form. However, magnetic path/inductance is reduced. These cores may also be substituted for ferrite as a means of lowering Q.
3. Minimum inductance value: with core 2 turns off from top of case.
4. C range and Qu measured by Q meter.
5. Inductance measured by HP-4191A at 100Mhz . . . the values reference only.

### *TYPE MC-139*

| TOKO Part Number | Winding (Space) | Tuning Capacitance Range (pF) | Q (min.) | Color Code | Inductance[3] (μH) |
|---|---|---|---|---|---|
| Ferrite core (30 – 250Mhz) | | | | | |
| NE545SN-100091 | 1.5t | 88.7 ± 3.5% | 50min. (at 100MHz) | White | .027 |
| NE545SN-100092 | 2.5t | 55.6 ± 5% | 80min. (at 100MHz) | Red | .036 |
| NE545SN-100093 | 3.5t | 38.5 ± 6% | 100min. (at 100MHz) | Orange | .060 |
| NE545SN-100094 | 4.5t | 28.2 ± 6% | 120min. (at 100MHz) | Yellow | .083 |
| NE545SN-100095 | 5.5t | 21.7 ± 6% | 120min. (at 100MHz) | Green | .110 |
| NE545SN-100096 | 6.5t | 17.9 ± 6% | 120min. (at 100MHz) | Blue | .134 |
| Brass Core | | | | | |
| NE545BN-100097 | 1.5t | 48.0 ± 2% | 60min. (at 150MHz) | White | .015 |
| NE545BN-100098 | 2.5t | 34.2 ± 3% | 55min. (at 150MHz) | Red | .024 |
| NE545BN-100099 | 3.5t | 25.8 ± 3.5% | 55min. (at 150MHz) | Orange | .035 |
| NE545BN-100100 | 4.5t | 20.8 ± 3.5% | 50min. (at 150MHz) | Yellow | .054 |
| NE545BN-100101 | 5.5t | 16.0 ± 3.5% | 50min. (at 150MHz) | Green | .060 |
| NE545BN-100102 | 6.5t | 13.5 ± 3.5% | 50min. (at 150MHz) | Blue | .071 |
| Ferrite core (30 – 250MHz) | | | | | |
| NE545SNAS-100103 | 1.5t | 102.0 ± 2% | 45min. (at 100MHz) | White | .015 |
| NE545SNAS-100104 | 2.5t | 70.1 ± 3.5% | 50min. (at 100MHz) | Red | .026 |
| NE545SNAS-100105 | 3.5t | 52.0 ± 4% | 50min. (at 100MHz) | Orange | .040 |
| NE545SNAS-100106 | 4.5t | 40.5 ± 4% | 50min. (at 100MHz) | Yellow | .053 |
| NE545SNAS-100107 | 5.5t | 32.5 ± 4% | 50min. (at 100MHz) | Green | .069 |
| NE545SNAS-100108 | 6.5t | 27.5 ± 4% | 50min. (at 100MHz) | Blue | .083 |
| Brass Core | | | | | |
| NE545BNAS-100081 | 1.5t | 51.6 ± 1.5% | 55min. (at 150MHz) | White | .012 |
| NE545BNAS-100082 | 2.5t | 38.3 ± 2% | 50min. (at 150MHz) | Red | .020 |
| NE545BNAS-100083 | 3.5t | 29.5 ± 2.5% | 50min. (at 150MHz) | Orange | .028 |
| NE545BNAS-100084 | 4.5t | 23.7 ± 2.5% | 45min. (at 150MHz) | Yellow | .036 |
| NE545BNAS-100085 | 5.5t | 18.6 ± 2.5% | 45min. (at 150MHz) | Green | .048 |
| NE545BNAS-100086 | 6.5t | 15.7 ± 2.5% | 45min. (at 150MHz) | Blue | .056 |

## MC-141

***Close Wound***
***Frequency Range:*** 30MHz-150MHz (2)
***Inductance Range:*** .013μH-0.23μH
***Temperature Coefficient:*** 150ppm/°C, max.



*Tuning Method*
*Tuning Tool: #71-1504*

## Quality Features:

- Ultra compact molded coil for RF stage in pager and small sized telecommunications equipment. Low profile (8mm).
- Molded of high temperature PBTP to withstand the heat absorbed during soldering.
- Suitable for most applications in the range of 30-200MHz. Ferrites available are optimum over the 30-150MHz range. For 200-500MHz, please see note regarding brass cores.
- Precise winding positioning is achieved on torsion machine to exacting spec before PBTP form is molded around it. This assures a constant winding pitch which provides outstanding uniformity in inductance, minimum stray capacitance, and optimum Q characteristics at high frequency. The MC141 mold surrounds winding on four sides for added stability.
- PBTP coil forms are designed for self-tapping by a lubricated screw core with an internally "splined" body matched to the tuning slug providing excellent torque control. By maintaining precision tolerances throughout fabrication, TOKO can guarantee the specifications for torque range. This reduces core breakage during trimming and once aligned in the circuit, TOKO coils will maintain the setting during the PCB assembly process. In extremely demanding applications, this precision eliminates the need and expense of locking screws.
- Presoldered terminal pins for reliable PCB connections.
- Winding and terminals are one integral piece, essentially eliminating "connection failures". One piece construction also makes these coils highly resistant to shock, vibration, humidity and temperature change. (±0.5% maximum frequency drift)
- A location tab is provided on one side to indicate the starting side of the winding and to facilitate correction positioning into PCB.
- Color code for turns identification.

## STANDARD DEVICES SELECTION GUIDE

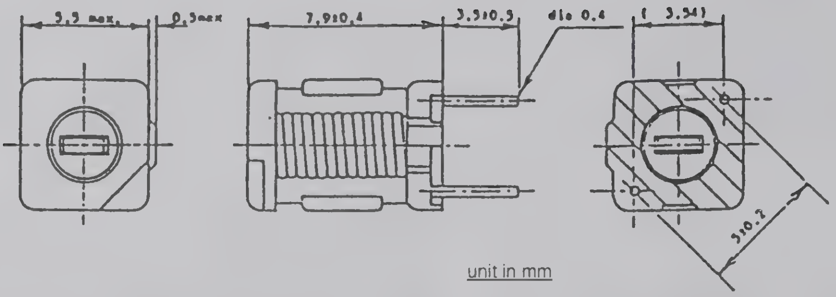
The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

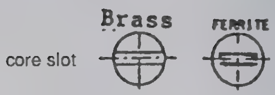
1. This device is available with an optional shield to permit the use of several devices in close proximity without interference and improve mounting stability. However the optional shield will reduce Q by about 20%.
2. Alternate use of brass core in items listed will increase the usable frequency of any specific coil form. However, magnetic path/inductance is reduced. These cores may also be substituted for ferrite as a means of lowering Q.
3. Minimum inductance value: with core 2 turns off from top of case.
4. C range and Qu measured by Q meter.
5. Inductance measured by HP-4191A at 100Mhz . . . the values reference only.

### TYPE MC-141

| TOKO Part Number | Winding Close | Tuning[4] Capacitance Range (pF) | Q (min.) | Test Frequency (MHz) | Color Code | Inductance[5] (μH) |
|---|---|---|---|---|---|---|
| Ferrite core (30 – 250Mhz) | | | | | | |
| NE547SNAS-100101 | 1½ | 101.0 ± 2.0% | 45 | 100 | White | .016 |
| NE547SNAS-100102 | 2½ | 66.0 ± 5.5% | 50 | 100 | Red | .030 |
| NE547SNAS-100103 | 3½ | 46.0 ± 4.5% | 50 | 100 | Orange | .046 |
| NE547SNAS-100104 | 4½ | 34.5 ± 5.0% | 50 | 100 | Yellow | .065 |
| NE547SNAS-100105 | 5½ | 26.8 ± 5.0% | 50 | 100 | Green | .086 |
| NE547SNAS-100106 | 6½ | 21.7 ± 5.0% | 50 | 100 | Blue | .106 |
| NE547SNAS-100107 | 7½ | 17.7 ± 5.0% | 50 | 100 | Violet | .130 |
| *NE547SNAS-100108 | 8½ | 15.2 ± 4.5% | 50 | 100 | Gray | .152 |
| *NE547SNAS-100109 | 9½ | 13.0 ± 4.5% | 45 | 100 | White | .180 |
| *NE547SNAS-100110 | 10½ | 11.2 ± 4.0% | 45 | 100 | Brown | .210 |
| Brass Core | | | | | | |
| NE547BNAS-100111 | 1½ | 50.7 ± 1.5% | 55 | 150 | White | .013 |
| NE547BNAS-100112 | 2½ | 34.7 ± 2.0% | 50 | 150 | Red | .023 |
| NE547BNAS-100113 | 3½ | 25.7 ± 3.5% | 45 | 150 | Orange | .034 |
| NE547BNAS-100114 | 4½ | 19.5 ± 3.5% | 45 | 150 | Yellow | .046 |
| NE547BNAS-100115 | 5½ | 15.9 ± 3.5% | 40 | 150 | Green | .058 |
| NE547BNAS-100116 | 6½ | 13.1 ± 3.5% | 40 | 150 | Blue | .068 |
| NE547BNAS-100117 | 7½ | 11.1 ± 3.5% | 40 | 150 | Violet | .081 |
| *NE547BNAS-100118 | 8½ | 15.0 ± 3.0% | 35 | 120 | Gray | .100 |
| *NE547BNAS-100119 | 9½ | 13.2 ± 3.0% | 35 | 120 | White | .115 |
| *NE547BNAS-100120 | 10½ | 11.5 ± 3.0% | 35 | 120 | Brown | .130 |

## DIMENSIONS. (UNIT IN MM)





Tuning driver:
Ferrite; Stock # 71-1504
Brass #71-1468

| TOKO Part Number | Winding Turns | Tuning[4] Capacitance C Range | Q (min.) | Test Frequency (MHz) | Color Code | Inductance[5] (µH) |
|---|---|---|---|---|---|---|
| Ferrite Core (30-250Mhz) | | | | | | |
| NE547SN-100121 | 1 1/2 | 87.0pF±3.5 % | 60 | 100MHz | WHITE | 21 |
| NE547SN-100122 | 2 1/2 | 52.0pF±5 % | 80 | at 100MHz | RED | 41 |
| NE547SN-100123 | 3 1/2 | 34.5pF±6 % | 80 | 100MHz | ORANGE | 65 |
| NE547SN-100124 | 4 1/2 | 24.6pF±7 % | 90 | 100MHz | YELLOW | 95 |
| NE547SN-100125 | 5 1/2 | 18.5pF±7 % | 90 | 100MHz | GREEN | 130 |
| NE547SN-100126 | 6 1/2 | 14.6pF±7 % | 90 | 100MHz | BLUE | 166 |
| NE547SN-100127 | 7 1/2 | 11.7pF±7 % | 90 | 100MHz | VIOLET | 211 |
| * NE547SN-100128 | 8 1/2 | 16.5pF±6 % | 80 | 80MHz | GRAY | 250 |
| * NE547SN-100129 | 9 1/2 | 14.0pF±6 % | 80 | 80MHz | WHITE | 300 |
| * NE547SN-100130 | 10 1/2 | 11.9pF±5 % | 80 | 80MHz | BROWN | 350 |
| Brass core | | | | | | |
| NE547BN-100131 | 1 1/2 | 47.0pF±2 % | 60 | 150MHz | WHITE | 15 |
| NE547BN-100132 | 2 1/2 | 31.4pF±3 % | 55 | 150MHz | RED | 27 |
| NE547BN-100133 | 3 1/2 | 22.5pF±4.5 % | 50 | 150MHz | ORANGE | 40 |
| NE547BN-100134 | 4 1/2 | 17.1pF±4.5 % | 50 | 150MHz | YELLOW | 54 |
| NE547BN-100135 | 5 1/2 | 13.7pF±4 % | 45 | 150MHz | GREEN | 70 |
| NE547BN-100136 | 6 1/2 | 11.3pF±4 % | 45 | 150MHz | BLUE | 86 |
| NE547BN-100137 | 7 1/2 | 23.6pF±4 % | 40 | 100MHz | VIOLET | 100 |
| * NE547BN-100138 | 8 1/2 | 18.7pF±3.5 % | 40 | 100MHz | GRAY | 128 |
| * NE547BN-100139 | 9 1/2 | 16.6pF±3.5 % | 40 | 100MHz | WHITE | 145 |
| * NE547BN-100140 | 10 1/2 | 14.7pF±3.5 % | 40 | 100MHz | BROWN | 100 |

*minimum inductance value with core 2 turns off from top bobbin
Orange and Qu measured by Q meter.
Inductance measured by HF-4191A at 100Hhz .. the values reference only.

# BALUN TRANSFORMERS

TOKO's high quality balun (balanced/unbalanced) transformers are precisely wound round a double ferrite core. They are available in a number of configurations with one through six turns.

These transformers offer low loss and excellent frequency response up to around 1GHz. They are available in 50 and 75 ohm versions.

TOKO's baluns are ideally suited for designing double balanced mixers, directional couplers, signal splitters, signal distributors, and impedance matching circuits.

They are available in both leaded and surface mount versions.

TOKO
TOKO AMERICA, INC.

1250 Feehanville Drive • Mt. Prospect, Illinois 60056 • TEL 708/297-0070 • FAX 708/699-7864

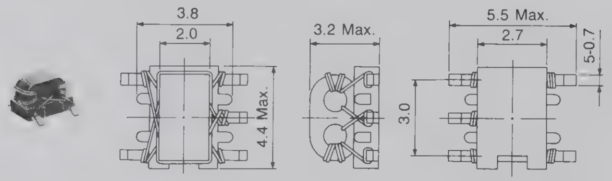
# TYPE B4F B5FL

## Balun Transformer

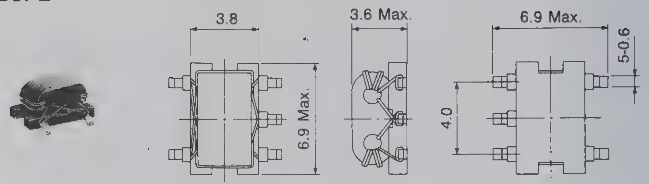
**TOKO**

***TYPE B4F:*** Surface Mount
***TYPE B5FL:*** Surface Mount

**B4F**



**B5FL**



## *Quality Features:*

- Paired wire used in windings guarantee a high degree of balance.
- Available in tape & reel for automatic insertion.
- Can be used for: Impedance matching, double balance mixing, power dividing & combining, and broad band transformation.

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design manufacture modified and custom devices meet your requirement. If you do not find the device for your application, please contact our sales office or representative office.

### *TYPE B4F*

| TOKO Part Number | Winding turns | Operating Frequency Range (MHz) | Insertion Loss (dB) | Fig. |
|---|---|---|---|---|
| Transformer for frequency mixer | | | | |
| 617DB-1007 | 2 | 25 ~2000 | 3 | 1 |
| 617DB-1009 | 3 | 6 ~2000 | 3 | 1 |
| 617DB-1006 | 3 | 150 ~2300 | 3 | 1 |
| 617DB-1010 | 4 | 3.5~2000 | 3 | 1 |
| 617DB-1018 | 5 | 2 ~2000 | 3 | 1 |
| Transformer for frequency mixer | | | | |
| 617PT-1025 | 1 | — | | 2 |
| 617PT-1019 | 2 | 8-750 | 3 | 2 |
| 617PT-1026 | 3 | 3.5-700 | 3 | 2 |
| Balun transformer | | | | |
| 617DB-1021 | 1½ | 20 ~ 750 | 3 | 3 |
| 617DB-1022 | 2½ | 4.5~3300 | 3 | 3 |
| 617DB-1023 | 3½ | 2.3~2700 | 3 | 3 |
| 617DB-1024 | 4½ | 1.5~2400 | 3 | 3 |

### *TYPE B5FL*

| TOKO Part Number | Winding turns | Operating Frequency Range (MHz) | Insertion Loss (dB) | Fig. |
|---|---|---|---|---|
| Transformer for frequency mixer | | | | |
| 616DB-1003 | 2 | 30 ~ 850 | 3 | 1 |
| 616DB-1004 | 3 | 6.5~1000 | 3 | 1 |
| 616DB-1007 | 4 | 3.5~1600 | 3 | 1 |
| 616DB-1008 | 5 | 2.5~1500 | 3 | 1 |
| Transformer for frequency mixer | | | | |
| 616PT-1027 | 1 | — | 3 | 2 |
| 616PT-1028 | 2 | 8 ~ 550 | 3 | 2 |
| 616PT-1029 | 3 | 3.5~ 500 | 3 | 2 |
| 616PT-1030 | 4 | 2 ~ 370 | 3 | 2 |
| 616PT-1037 | 1 | — | 3 | 2 |
| 616PT-1038 | 2 | 500 ~ 850 | 3 | 2 |
| 616PT-1039 | 3 | 240 ~ 500 | 3 | 2 |
| 616PT-1040 | 4 | 85 ~ 380 | 3 | 2 |
| Balun transformer | | | | |
| 616DB-1048 | 1½ | 5.5~ 850 | 3 | 3 |
| 616DB-1049 | 2½ | 2.5~2000 | 3 | 3 |
| 616DB-1050 | 3½ | 1.2~1700 | 3 | 3 |
| 616DB-1051 | 4½ | 0.8~1400 | 3 | 3 |
| 616DB-1052 | 5½ | 0.6~1300 | 3 | 3 |
| Balun transformer | | | | |
| 616DB-1053 | 1½ | 160 ~2200 | 3 | 4 |
| 616DB-1017 | 2½ | 55 ~1700 | 3 | 4 |
| 616DB-1054 | 3½ | 30 ~1400 | 3 | 4 |

PIN CONNECTIONS:

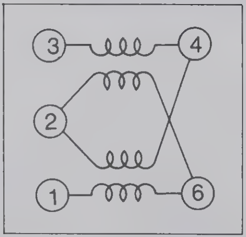


Fig. 1

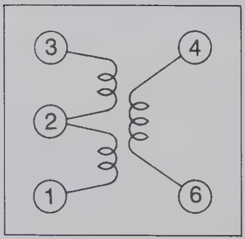


Fig. 2

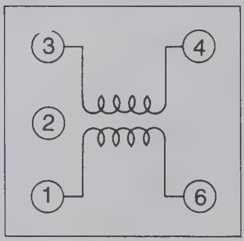


Fig. 3

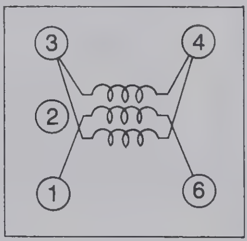
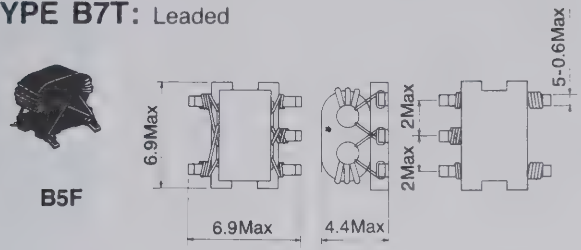


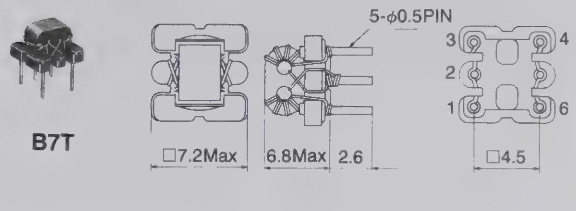
Fig. 4

# TYPE B5F B7T

**TYPE B5F:** Surface Mount
**TYPE B7T:** Leaded



B5F



B7T

## *Quality Features:*

- Paired wire used in windings guarantee a high degree of balance.
- Available in surface mount or leaded type.
- Available in tape & reel for automatic insertion.
- Can be used for: Impedance matching, double balance mixing, power dividing & combining, and broad band transformation.

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design manufacture modified and custom devices to meet your requirement. If you do not find the device for your application, please contact our sales office or representative office

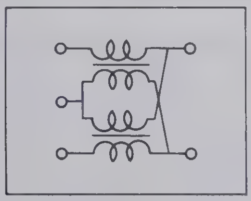
### *TYPE B5F*

| TOKO Part Number | Winding | Operating Frequency Range | Insertion Loss | Fig. |
|---|---|---|---|---|
| Double Balanced Mixer | | | | |
| 458DB-1012 | n=1 | 50MHz~400MHz | 10dB max. | |
| 458DB-1013 | n=2 | 10MHz~ 1.0GHz | 6dB max. | |
| 458DB-1003 | n=3 | 8MHz~800MHz | 3.5dB max. | |
| 458DB-1008 | n=4 | 6MHz~600MHz | 2.5dB max. | |
| 458DB-1011 | n=5 | 5MHz~500MHz | 2dB max. | |
| 458DB-1005 | n=2 | 400MHz~ 1.3GHz | 4dB max. | |
| Frequency Mixer | | | | |
| 458PT-1085 | n=1 | — | 3dB max. | 2 |
| 458PT-1052 | n=2 | 9MHz~350MHz | 3dB max. | 2 |
| 458PT-1024 | n=3 | 3.5MHz~470MHz | 3dB max. | 2 |
| 458PT-1086 | n=4 | 2.2MHz~400MHz | 3dB max. | 2 |
| 458PT-1087 | n=5 | 1.5MHz~300MHz | 3dB max. | 2 |
| DISTRIBUTER | | | | |
| 458DS-1014 | | 20MHz~600MHz | IN to OUT-1,2<br>4.5dB max.<br>OUT-1 to OUT-2<br>(ISOLATION)<br>10dB min. | |
| DIRECTIONAL COUPLER | | | | |
| 458PS-1015 | n=4 | 6MHz~600MHz | IN to OUT-1 1.3dB max.<br>IN to OUT-2 11dB<br>~14dB | |
| 458PS-1006 | n=5 | 6MHz~600MHz | IN to OUT-1 0.9dB max.<br>IN to OUT-2 13dB<br>~16dB | |
| 458PS-1007 | n=6 | 6MHz~600MHz | IN to OUT-1 0.8dB max.<br>IN to OUT-2 15dB<br>~17dB | |

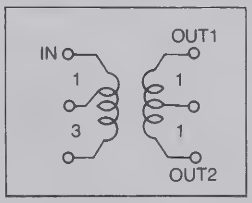
### *TYPE B7T*

| TOKO Part Number | Winding | Operating Frequency Range | Insertion Loss | Fig. |
|---|---|---|---|---|
| Double Balanced Mixer | | | | |
| 456DB-1013 | n=1 | 50MHz~400MHz | 10dB max. | |
| 456DB-1014 | n=2 | 10MHz~ 1.0GHz | 6dB max. | |
| 456DB-1005 | n=3 | 8MHz~800MHz | 3.5dB max. | |
| 456DB-1006 | n=4 | 6MHz~600MHz | 2.5dB max. | |
| 456DB-1007 | n=5 | 5MHz~500MHz | 2dB max. | |
| 456DB-1009 | n=2 | 400MHz~ 1.3GHz | 4dB max. | |
| DISTRIBUTER | | | | |
| 456DS-1012 | | 20MHz~600MHz | IN to OUT-1,2<br>4.5dB max.<br>OUT-1 to OUT-2<br>(ISOLATION)<br>10dB min. | |
| DIRECTIONAL COUPLER | | | | |
| 456PS-1015 | n=4 | 6MHz~600MHz | IN to OUT-1 1.3dB max.<br>IN to OUt-2 11dB<br>~14dB | |
| 456PS-1016 | n=5 | 6MHz~600MHz | IN to OUT-1 0.9dB max.<br>IN to OUT-2 13dB<br>~16dB | |
| 456PS-1011 | n=6 | 6MHz~600MHz | IN to OUT-1 0.8dB max.<br>IN to OUT-2 15dB<br>~17dB | |

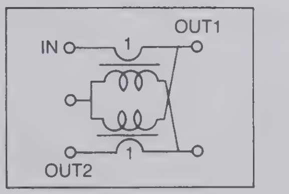
PIN CONNECTIONS



Double Blanced Mixer



Distributor



Directional Coupler

# LC FILTERS

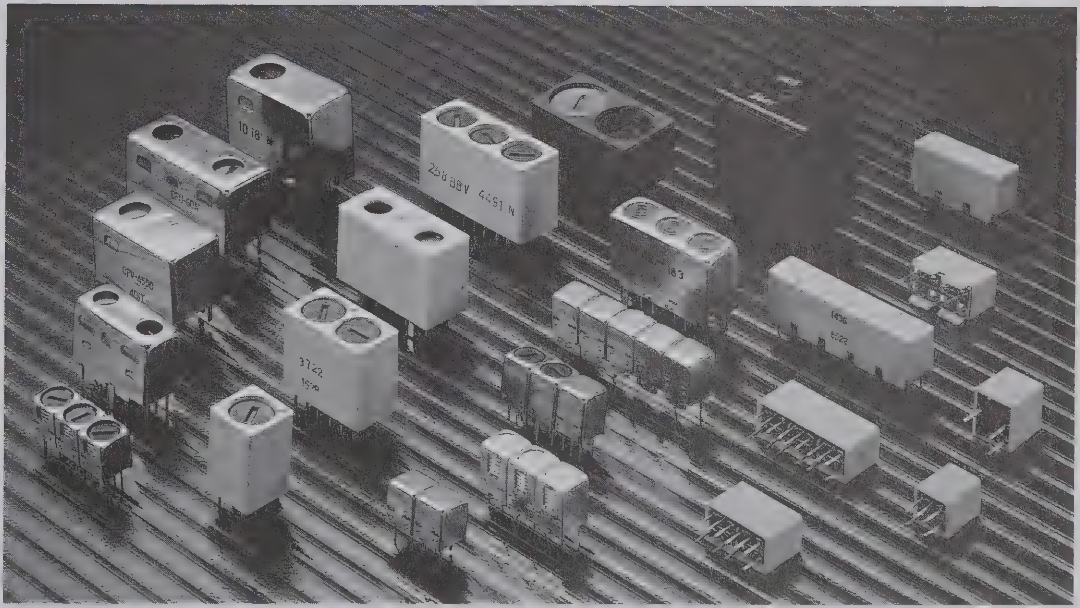
TOKO LC Filters are used in a variety of video and audio equipment applications. TOKO offers high-pass, band-pass, low-pass, equalizer and delay line circuits. Types are available in single and ganged assemblies of two through five elements to achieve the desired filtering characteristics. Adjustable and fixed types are available in 5mm, 7mm and 10mm coils. Several are available with alternate internal capacitance options.

The TOKO LC Filters featured in this section are designed on CAD equipment to optimize the characteristics. Application requirements and specifications are entered in TOKO's CAD system to determine the values and characteristics required in the design of the filter. Regression analysis and tolerance levels are calculated to finalize the design.

The CAD design system is able to make substitute recommendations offering alternatives which may enhance the filter design. In addition to the standard items shown in this section, TOKO will also design and manufacture LC filters with the specific characteristics needed to satisfy your requirements.

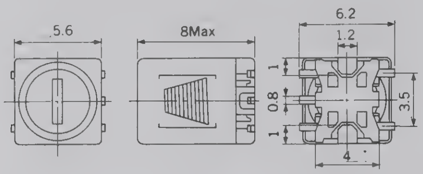
Various packaging schemes are available. In addition to bulk, cartridges are offered for high volume insertion equipment. Consult TOKO AMERICA for specifics.

Prototyping and experimenting kits are avalable for various types. Contact the nearest TOKO AMERICA sales office for details and ordering information.



## TYPE 5F FILTER
## For reflow soldering

*Frequency Range:* ~100kHz
*Inductance Range:* 1~20mH
*Operating Temperature:* −10°C~70°C



- Ideal for audio processing system.
- Larger ferrite drum can attain a higher Q than other typical SMD coils. This will result in larger inductances, maintain high magnetic saturation for large signals, and maintain low distortion of signals. This type also has electromagnetic shielding for low EMI.
- Base can accommodate up to two internal capacitors.
- Reflows at 235°C to 245°C, 5 to 10 seconds, maximum.

## STANDARD FILTER SELECTION GUIDE

The Part Numbers shown in the table below are standard coils, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the devices for your application, please contact our sales office or representative office.

### *TYPE 5F*

| TOKO Part Number | Cutoff Frequency (kHz) | Pole Frequency (kHz) | I/O Impedance (Ω) | Notes |
|---|---|---|---|---|
| A357LAI-1017AMAY | 13.5 | 15.73 | 1800/3900 | LPF |
| A375LAI-1113 | 20 | 200 | 2000/3300 | LPF |
| A357LAI-1107 | 30 | 70 | 2200/2700 | LPF |
| A375LAI-1057AAD | 200 | — | 1000/1000 | LPF |

### *TYPE 5F*

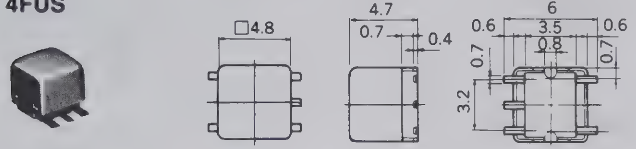
| TOKO Part Number | Inductance (mH) | Q (min.) | Test Frequency (kHz) | Tuning Inductance Range (%) |
|---|---|---|---|---|
| A375NCG-1081 | 1.0 | 60 | 252 | ±4 |
| A375NCG-1082 | 1.2 | 60 | 252 | ±4 |
| A375NCG-1083 | 1.5 | 60 | 252 | ±4 |
| A375NCG-1084 | 1.8 | 60 | 252 | ±4 |
| A375NCG-1085 | 2.2 | 60 | 252 | ±4 |
| A375NCG-1086 | 2.7 | 60 | 252 | ±4 |
| A375NCG-1087 | 3.3 | 60 | 252 | ±4 |
| A375NCG-1088 | 3.9 | 60 | 252 | ±4 |
| A375NCG-1089 | 4.7 | 60 | 252 | ±4 |
| A375NCG-1090 | 5.6 | 60 | 252 | ±4 |
| A375NCG-1091 | 6.8 | 60 | 252 | ±4 |
| A375NCG-1092 | 8.2 | 60 | 252 | ±4 |
| A375NCG-1093 | 10.0 | 40 | 79.6 | ±4 |
| A375NCG-1094 | 12.0 | 40 | 79.6 | ±4 |
| A375NCG-1095 | 15.0 | 40 | 79.6 | ±4 |
| A375NCG-1096 | 18.0 | 40 | 79.6 | ±4 |
| A375NCG-1097 | 20.0 | 40 | 79.6 | ±4 |

# 4FJ
# 4F
# 4FN
# Series

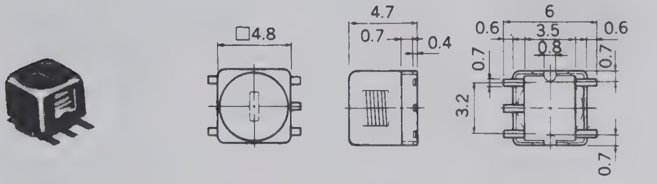
## 4F Series Single, Double, or Triple

**For Reflow Soldering**
***Frequency Range:*** 0.1-15MHz
***Inductance Range:*** 4FJ 10-600$\mu$H
4F 10-700$\mu$H
4FN 10-1200$\mu$H
***Optional Internal Capacitance Range:*** 4 to 750pF (1)

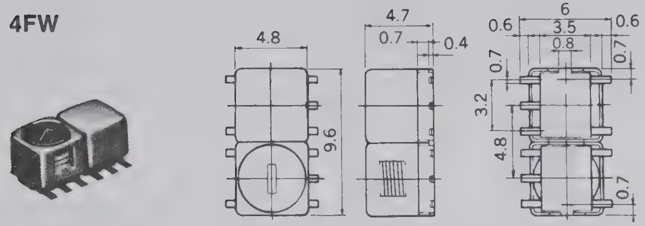
**4FUS**



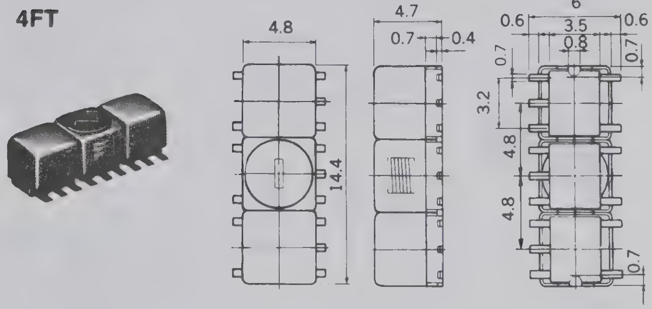
**4FS**



**4FW**



**4FT**



## *Quality Features:*

- Ultra-miniature LC filters.
- Ideal for satellite navigation, Video cameras, and communications equipment. Also high, low, and bandpass filters, delay lines, equalizers, and similar circuits.
- Each unit is adjustable or fixed and may contain up to two capacitors. Any combination of up to three units can be ganged together into one unit with a maximum of 6 internal capacitors.
- Q value of 4F series is typically 40 and of 4FN is typically 70.
- Coil form is specially designed with a high temperature material, highly resistant to damage and distortion during soldering.
- 4FJ series is low profile, only 3.9mm max. high.
- TOKO features a unique manufacturing technique to create a smooth and consistent torque level between tuning core and coil form. Reduces damage during alignment and firmly holds final setting.
- Plated brass case assures good electrostatic shielding.
- Package design is ideal for automatic assembly. Available on 12mm embossed tape reel.
- Operating Temperature −10°C to +60°C.
- Reflows at 235 to 245°C, 5 to 10 seconds, maximum.

## STANDARD COILS SELECTION GUIDE

The Part Numbers shown in the table below are standard coils, which are readily available. TOKO will design and manufacture modified and custom coils with specific characteristics to meet your requirements. If you do not find the coil for your application , please contact our sales office or representative office.

(1) Available with internal capacitors, The standard increments shown on page 22.

### *4F Series*

| TOKO Part Number | Type | Bandwidth (MHz) −3db | I/O Impedance (ohm) | Notes |
|---|---|---|---|---|
| H354BAI-1425DAD | 4FUS | 2.9/4.3 | 1000 | 3.58MHz BPF(D-Tune) |
| H354BAI-1748DAD | 4FUS | 3.7/5.2 | 1000 | 4.43MHz BPF(D-Tune) |
| H355BSJ-1157KP | 4FW | 2.4/4.5 | 1000 | 3.58MHz BPF(W/Trap) |
| H355BSJ-2990KDD | 4FW | 3.4/5.4 | 1000 | 4.43MHz BPF(W/Trap) |

*continued on next page*

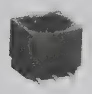
# 4FJ
# 4F
# 4FN
# Series

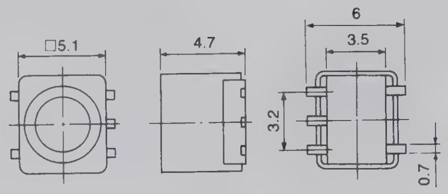
## LC Filters — Surface Mount

TOKO

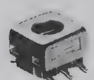
*continued from previous page*

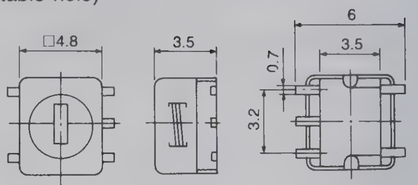
**4FNS**



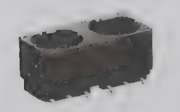


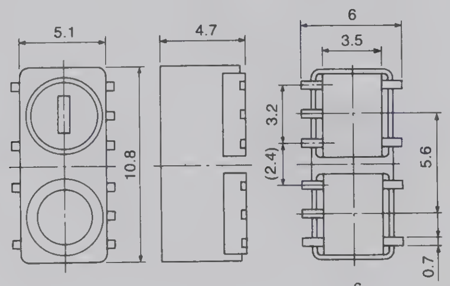
**4FJUS** (without adjastable hole)
**4FJS**



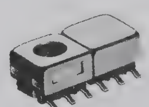


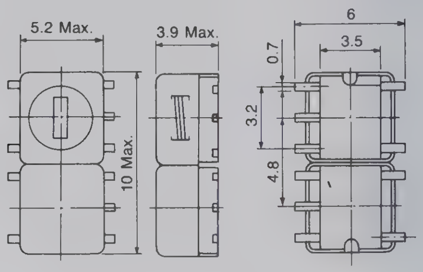
**4FNW**



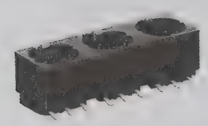


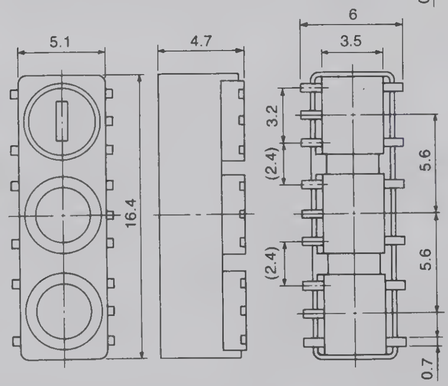
**4FJW**



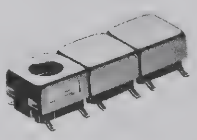


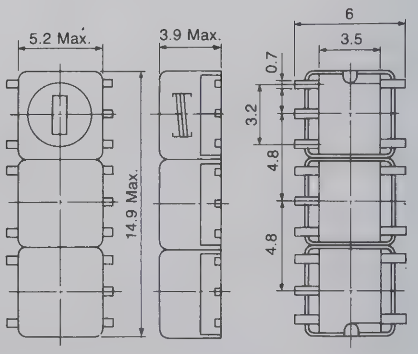
**4FNT**





**4FJT**





## 4F Series

| TOKO Part Number | Type | Bandwidth (MHz) −3db | I/O Impedance (ohm) | Performance(1) | Notes |
|---|---|---|---|---|---|
| G381EAI-1948DFD | 4FNUS | 8 | 1000 | EQT | 50ns(7MHz) |
| G354EAH-2450DFE | 4FUS | 6 | 1500 | EQT | 70ns(6MHz) |
| H354LAI-2192DJD | 4FUS | 5 | 1000 | LPF | 120ns(3MHz) |
| G355ENK-1979LAD | 4FW | 6 | 1000 | EQT | 150ns(6MHz) |
| H355LSK-2903LMD | 4FW | 3 | 1000 | LPF | 200ns(2.8MHz) |
| H355LNK-1236MGD | 4FW | 5.8 | 1000 | D.L | 200ns(4MHz) |
| H355LNK-1569MOD | 4FW | 3.5 | 1000 | D.L | 250ns(3.5MHz) |
| H356LNM-2557TTD | 4FT | 5.5 | 1000 | D.L | 300ns(5MHz) |
| G356ENM-2587TCD | 4FT | 6 | 1000 | EQT | 300ns(5MHz) |
| H355LNK-1714LGD | 4FW | 3 | 1000 | D.L | 350ns(2MHz) |
| G383ENM-2688TCD | 4FNT | 6 | 1000 | EQT | 350ns(4MHz) |
| H356LNM-1420VID | 4FT | 3.5 | 1000 | D.L | 400ns(3MHz) |
| H356LSM-2592VLD | 4FT | 3.2 | 1000 | D.L | 450ns(3MHz) |
| H356LSM-2476VLD | 4FT | 3 | 1000 | D.L | 500ns(3MHz) |
| H356LAM-1281TWD | 4FT | 3.3 | 1000 | LPF | 500ns(2.5MHz) |
| G383ENL-2617TCD | 4FNT | 3.5 | 1000 | EQT | 500ns(2.5MHz) |
| H356LNM-2313VID | 4FT | 3.2 | 1000 | LPF | 600ns(2MHz) |

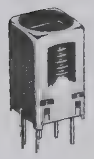
(1): EQT: Equalizing transformer
LPF: Low Pass Filter
D.L: Delay Line

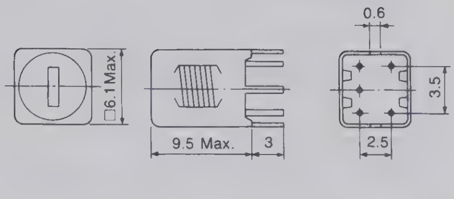
**Audio Frequency LC Filters**
**5VHS Single**
**5VHW Double**
**5VHT Triple**
***Frequency Range:*** 10-200kHz
***Inductance Range:*** 0.05 -15mH
***Optional Internal Capacitance:*** 10-8200pF (1)

## Quality Features:

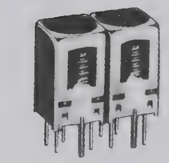
- Ideal use for low pass filters in audio circuits.
- Only 9.5mm high.
- Available in fixed or adjustable models.
- Up to two internal capacitors are included to save board space.
- Tuning cup core for inductance variation is threaded directly into the metal cavity, offering increased stability and space saving. Wider frequency tuning range is the result of the ability to use a large bobbin and cup core.
- Plated brass case and ferrite cup core provide electrostatic and electromagnetic shielding for low EMI.
- Terminals feature rounded ends to facilitate PWB insertion and are presoldered to ensure a reliable connections.
- Available ganged up to three units for extended performance. As a Delay Line, to achieve desired time delay. As an Equalizer, to achieve better compensation. As a bandpass filter, to achieve high selectivity.

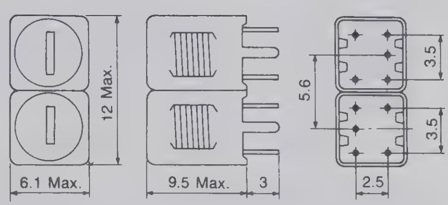
**5VHS**



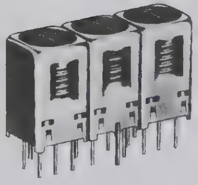


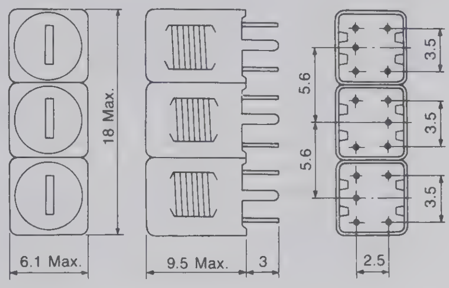
**5VHW**





**5VHT**





## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices to meet your requirements. If you do not find the device for your application, please contact our sales office or representative office.

(1) Available with internal capacitors. The standard increments shown on Page 22.

### *5VH Series*

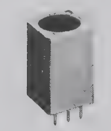
| TOKO Part(1) Number | Type | Cutoff Freq. (kHz) | 1st Pole Freq. (kHz) | 2nd Pole Freq. (kHz) | Input Impedance (Ω) | Output Impedance (Ω) |
|---|---|---|---|---|---|---|
| A329LBIS-0022AMAI | 5VHS | 12.5 | 15.73 | 53 | 2200 | 3300 |
| A330LDKS-0068NZT | 5VHW | 12.5 | 15.62 | 65 | 1000 | 1500 |
| TA331LTMS-0158IFG | 5VHT | 15 | 19 | 23 | 1000 | 6800 |

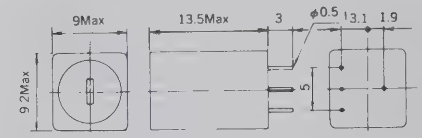
# ABS
# ABW
# ABT
# Series

## Low Frequency LC Filters ABS07/ABW07/ABT07

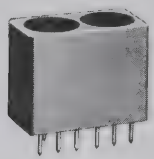
***Frequency Range:*** 10-200kHz
***Inductance Range:*** 1-95mH
***Optional Capacitance Values:*** 4-6800pF

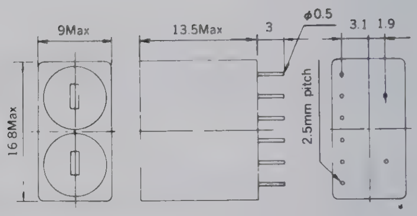
**ABS07**



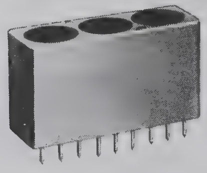


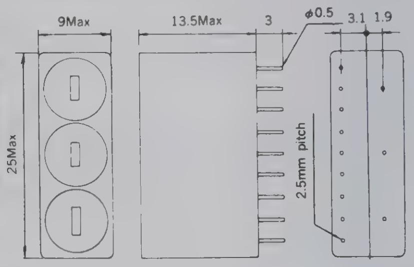
**ABW07**





**ABT07**





### *Quality Features:*

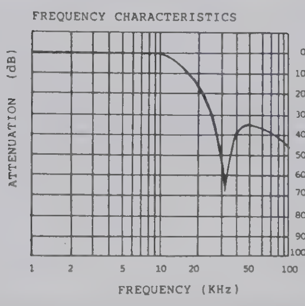
- Ideal for audio processing systems, FM multiplex and Dolby by systems, low pass and band pass in stereo, security systems.
- Ferrite drum core used for high Q and stability in inductance.
- Base can accommodate up to two internal capacitors.
- Drum and cup core are closely fitted for low magnetic reluctance and resultant high Q, typically 70 at 20kHz. Also features low magnetic coupling between coils.
- Coil form is wax impregnated to form a moisture barrier against corrosion.
- Cup core is threaded directly into base offering increased stability and smoother tuning.
- Large ferrite cup core provides excellent electromagnetic shielding for low EMI.
- Terminals feature rounded ends to facilitate PWB insertion and are presoldered to ensure reliable connections.

## STANDARD DEVICES SELECTION GUIDE

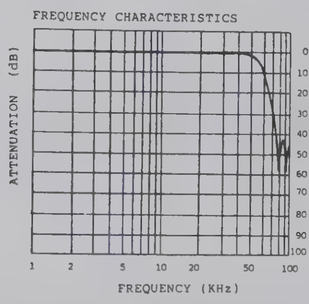
The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application, please contact our sales office or representative office.

| TOKO Part Number | Type | BW or Fc (kHz) @ −3dB | BW or Fc (kHz) @ −35dB | I/O Impedance (Ω) | Notes |
|---|---|---|---|---|---|
| 257BLR-3666N | ABW07 | 10.0 | 15.7 | 4700 | 10kHz LPF w/15.7kHz & 31.4kHz Trap |
| 258BBV-4527N | ABT07 | 68.7/88.7 | | 3300 | 78.67kHz BPF w/o Trap |
| 258BLR-45280 | ABW07 | 12.0 | 15.7 | 4700 | LPF |
| 257BLT-4670N | ABW07 | 47.2 | 78.7 | 4700 | 50kHz LPF |
| 258BBV-4808N | ABT07 | 68.7/88.7 | | 3300 | 78.67kHz BPF |
| 256BLV-4921N | ABS07 | 13.0 | 31.5 | 4700 | 13kHz LPF |
| ***For Duplex Television Sound*** | | | | | |
| 257BLR-3666N | ABW07 | 10 | 15.7 | 4700 | LPF w/15.7kHz & 31.4kHz traps |
| 257BLR-4580N | ABW07 | 12 | | 4700 | LPF w/15.7kHz & 31.4kHz traps |
| 258BBV-4527N | ABT07 | 68.7/88.7 | | 3300 | SAP BPF w/o Trap |
| 258BBV-4808N | ABT07 | 68.7/88.7 | | 3300 | SAP BPF w/63 & 94 Traps |
| 257BLT-4670N | ABW07 | 47.2 | | 4700 | LPF w/78.6 & 94 Traps |
| ***For FM Stereo*** | | | | | |
| 257BLR-3618N | ABW07 | 15 | | 4700 | LPF W/19 & 38 Traps |
| 257BLRB-3811N | ABW07 | 13 | | 3300 | 2CH LPF w/19 Traps |
| 257BLR-3718N | ABW07 | 15 | | 3300 | LPF w/19 & 38 Traps |
| 257BLR-3721N | ABW07 | 15 | | 3300 | LPF-For Dolby |

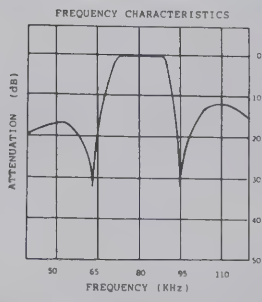
256BLV-4921N



257BLT-4070N

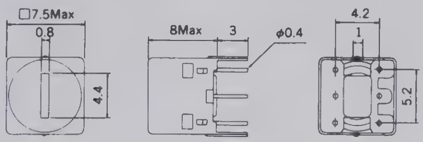


258BBV-4808N



## 7PD Low Frequency LC Filters
### *Audio*

***Frequency Range:*** 10-300kHz
***Inductance Range:*** 1-60mH
***Optional Capacitance Values:*** 12-10,000pF



## *Quality Features:*

- Low profile, only 8mm high, is the result of using chip capacitors instead of tubular types.
- Ideal as third order low or high pass filters or single tuned filters in trap/bridge T circuits, delay lines and Dolby noise reduction.
- Tuning cup core for inductance variation is threaded directly into the metal cavity, offering increased stability and space saving. Wider frequency range is the result of the ability to use a large bobbin and cup core.
- Up to two internal capacitors can be installed in base to save board space.
- Coil form is wax impregnated to form a moisture barrier against corrosion and prevent microphonics.
- Plated brass case and ferrite cup core provide electrostatic and electromagnetic shielding for low EMI.
- Terminals feature rounded ends to facilitate PWB insertion and are presoldered along with ground tabs for reliable bonding.

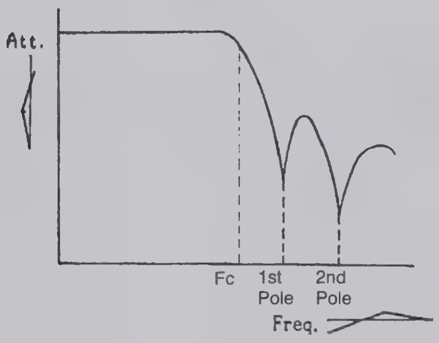
## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application, please contact our sales office or representative office.

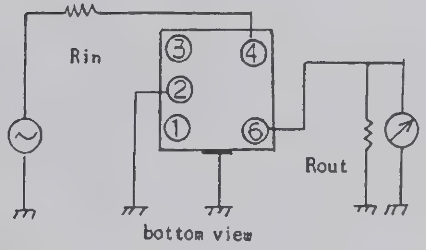
### *TYPE 7PD*

| TOKO Part Number | Cutoff Freq. (kHz) | 1st Pole Freq. (kHz) | 2nd Pole Freq. (kHz) | Input Impedance (Ω) | Output Impedance (Ω) |
|---|---|---|---|---|---|
| F338DJ-1020 | 12 | 15.73 | 70 | 1200 | 3900 |
| F388DJ-1222 | 12 | 19 | 38 | 1200 | 4700 |
| F388DJ-1229 | 70 | 114 | 190 | 5100 | 39000 |

Typical Pass Band characteristic

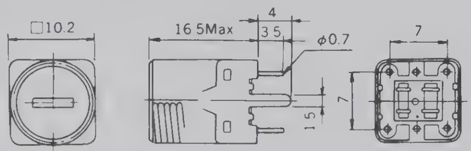


Connection



# 10PD Low Frequency LC Filters
## *Audio*

***Frequency Range:*** 10-200kHz
***Inductance Range:*** 1-55mH
***Optional Capacitance Values:*** 5-6800pF



## *Quality Features:*

- Ideal for third order low or high pass filters or single tuned filter, trap/bridge T circuits, delay lines and Dolby noise reduction.
- Tuning cup core for inductance variation is threaded directly into the metal cavity, offering increased stability and space saving. Wider frequency tuning range is the result of the ability to use a larger bobbin and cup core.
- Up to two internal capacitors can be included to save board space.
- Coil form is wax impregnated to form a moisture barrier against corrosion and prevent microphonics.
- Plated brass case and ferrite cup core provide electrostatic and electromagnetic shielding for low EMI.
- Terminals feature rounded ends to facilitate PWB insertion and are presoldered along with ground tabs for reliable bonding.
- Metal shield has upper and lower supports to hold coil form securely for improved stability.

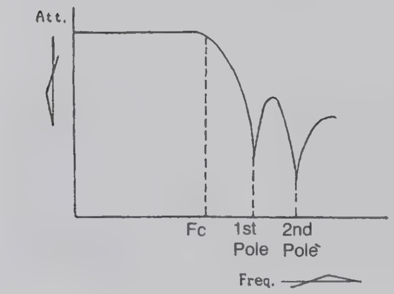
## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application, please contact our sales office or representative office.

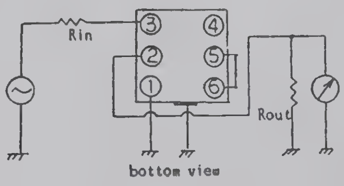
### *TYPE 10PD*

| TOKO Part Number | Cutoff Freq. (kHz) | 1st Pole Freq. (kHz) | 2nd Pole Freq. (kHz) | Input Impedance (Ω) | Output Impedance (Ω) | Connection |
|---|---|---|---|---|---|---|
| 253AGGS-1054 | 15 | 19 | 38 | 3300 | 3300 | A |
| 253AGGS-1076 | 12 | 15.73 | 31.46 | 2200 | 4700 | A |
| 253AGGS-1174 | 15 | 19 | 95 | 2200 | 4700 | B |

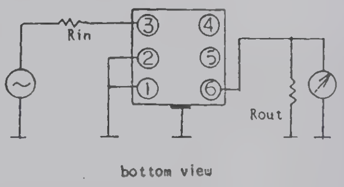
Typical Pass Band characteristic



Connection A



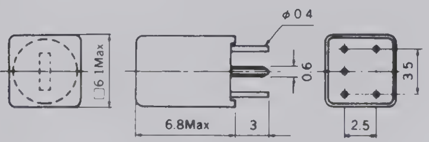
Connection B



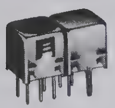
## Medium Frequency LC Filters
## *Single*
## *Double*
## *Triple*

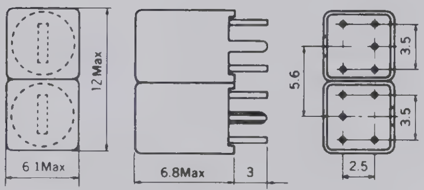
*Frequency Range:* 0.1-15MHz
*Inductance Range:* 10-700$\mu$H
*Optional Capacitance Value:* 4-750 pF

**5VLS**

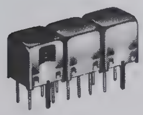


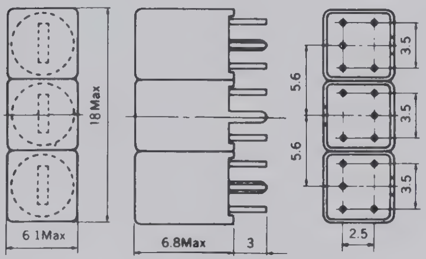
**5VLW**





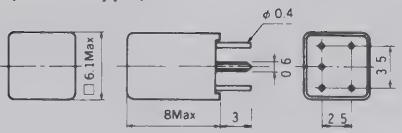
**5VLT**





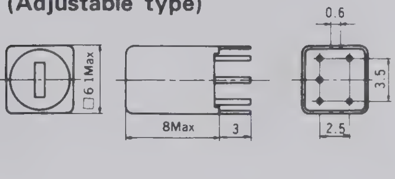
**5VUS**

**(Fixed type)**

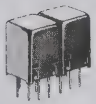


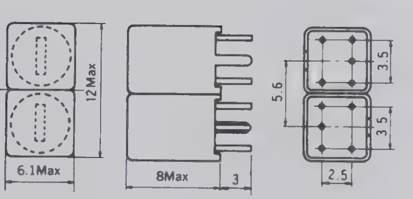
**5VS**

**(Adjustable type)**

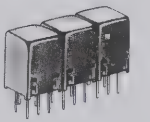


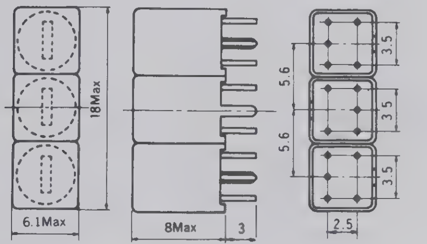
**5VSW**





**5VST**





## *Quality Features:*

- Low profile, only 8mm high, these 5mm square filters utilize ceramic chip capacitors to reduce height and perform like larger 7mm types. Q is typically 40.
- Available in fixed or adjustable models.
- Up to two internal capacitors can be installed to save board space.
- Ferrite tuning cup core for inductance variation is threaded directly into the metal cavity, offering increased stability and space saving. Wider frequency tuning range is the result of the ability to use a large ferrite cup core.
- Plated brass case and ferrite core provide electrostatic and electromagnetic shielding for low EMI.
- Terminals feature rounded ends to facilitate PWB insertion and are presoldered to ensure reliable connections.
- Corner standoffs on case assure upright positioning of the device during wave soldering and flux cleaning.
- Available ganged up to three elements for extended performance. As a Delay Line, achieve desired time delay. As an Equalizer, achieve better compensation. As a Low Pass Filter, achieve higher selectivity.

*continued on next page*

# 5VF
# 5VFN
# Series

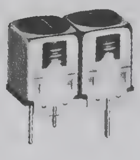
## Medium Frequency LC Filters

***Single***
***Double***
***Triple***
***Quadruple***
***Quintuple***

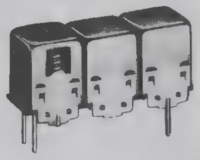
***Frequency Range:*** 0.1-15MHz
***Inductance Range:*** 10-700$\mu$H
***Optional Capacitance Value:*** 4-750pF

**5VF series**

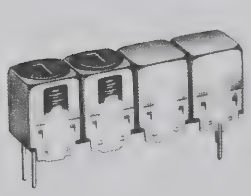
**5VFW**



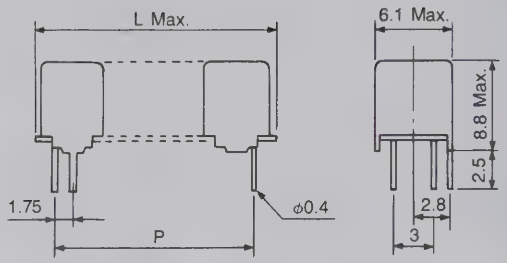
**5VFT**



**5VFQ**



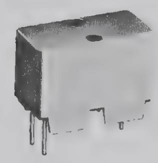
**5VFP**



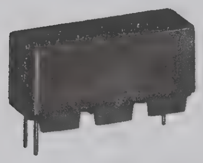
| Type | Element |  | L | P |
|---|---|---|---|---|
|  | L | C | (Max.) |  |
| 5VFW | 2 | 4 | 12.2 | 9.1 |
| 5VFT | 3 | 6 | 17.9 | 14.8 |
| 5VFQ | 4 | 8 | 23.6 | 20.4 |
| 5VFP | 5 | 10 | 29.3 | 26.0 |

**5VFN Series**

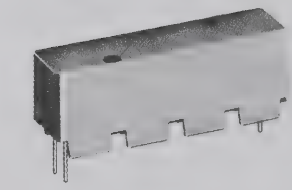
**5VFNW**



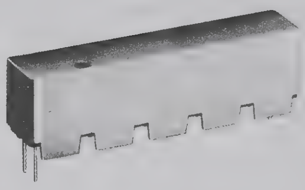
**5VFNT**

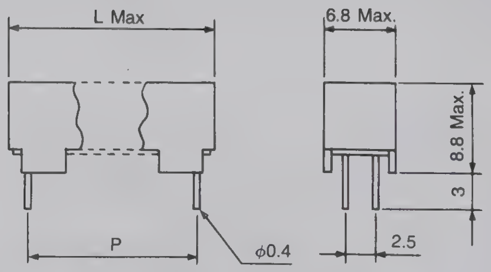


**5VFNQ**



**5VFNP**





| Type | Element |  | L | P |
|---|---|---|---|---|
|  | L | C | (Max.) |  |
| 5VFNW | 2 | 4 | 12.5 | 9.1 |
| 5VFNT | 3 | 6 | 18.3 | 14.8 |
| 5VFNQ | 4 | 8 | 24.0 | 20.4 |
| 5VFNP | 5 | 10 | 29.8 | 26.0 |

## *Quality Features:*

- Ideal as low pass filter, high pas filter or bandpass filter for VCR and/or video equipment.

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application, please contact our sales office or representative office.

***5V Series***

| TOKO Part Number | Type | BW or FC (MHz) @ −3dB | I/O Impedance (Ω) | Notes |
|---|---|---|---|---|
| H321LNP-1436PBAB | 5VFNP | 6.0 | 1200 | 400ns D.L |
| H345HE0-6277VFD | 5VNQ | 6.0 | 1000 | 400ns D.L. |
| H286BAIS-6276DAD | 5VUS | 2.8/4.3 | 1000 | 3.58MHz BPF |
| H286BAIS-4963DAD | 5VUS | 3.73/5.13 | 1000 | 4.43MHz BPF |
|  |  |  |  | FOR CCD TV CAMERA |
| H327LNKS-1329MGV | 5VLW | 3.5 | 1000 | Y-LPF |
| H326LAIS-1282 | 5VLUS | 4.0 | 1000 | D.L.(180ns) |
| H328LSMS-1328 | 5VLT | 2.5 | 1000 | Y-EQT(400ns) |
| H325LCIS-1330 | 5VLS | 0.7 | 1800 | B.R-LPF |
| H326BAIS-1062 | 5VLUS | 2.8/4.3 | 1000 | BPF 3.58MHz |
|  |  |  |  | DELAY LINES |
| G286BAIS-3066DFD | 5VUS | 10 | 1000 | EQT 50ns (10MHz) |
| H287LNIS-3092AD | 5VSW | 10 | 1000 | D.L. 80ns (10MHz) |
| G286EAIS-3065DFD | 5VUS | 10 | 1000 | EQT 100ns (4MHz) |
| G287ENKS-3141LAD | 5VSW | 10 | 1000 | EQT 100ns (10MHz) |
| H287LNIS-3093LAD | 5VSW | 7 | 1000 | D.L. 100ns (5MHz) |
| H287LNIS-3094LAD | 5VSW | 6 | 1000 | D.L. 120ns (6MHz) |
| G287ENKS-3140 | 5VSW | 10 | 1000 | EQT 130ns (8MHz) |
| H286EAIS-3158DFD | 5VUS | 10 | 1000 | EQT 150ns (3.5MHz) |
| G287ENKS-3042LAD | 5VSW | 10 | 1000 | EQT 150ns (7MHz) |
| H287LNIS-3095LAD | 5VSW | 4.5 | 1000 | D.L. 150ns (5MHz) |
| G287ENKS-3119LAD | 5VSW | 10 | 1000 | EQT 200ns (5MHz) |
| G287ENKS-3046LAD | 5VSW | 10 | 1000 | EQT 250ns (4MHz) |
| G287ENKS-3125LAD | 5VSW | 10 | 1000 | EQT 300ns (3.5MHz) |
| H288LSMS-3245 | 5VST | 6 | 1000 | LPF 300ns (6MHz) |
| G288ENMS-3126TCD | 5VST | 10 | 1000 | EQT 400ns (4MHz) |
| H290LNMN-6299UWD | 5VNT | 4 | 1000 | Y-LPF 450ns (3.5MHz) |
| G288ENMS-3101TCD | 5VST | 8 | 1000 | EQT 500ns (3.5MHz) |
| G290ENMN-3060TCD | 5VNT | 8 | 1000 | EQT 750ns (2.5MHz) |

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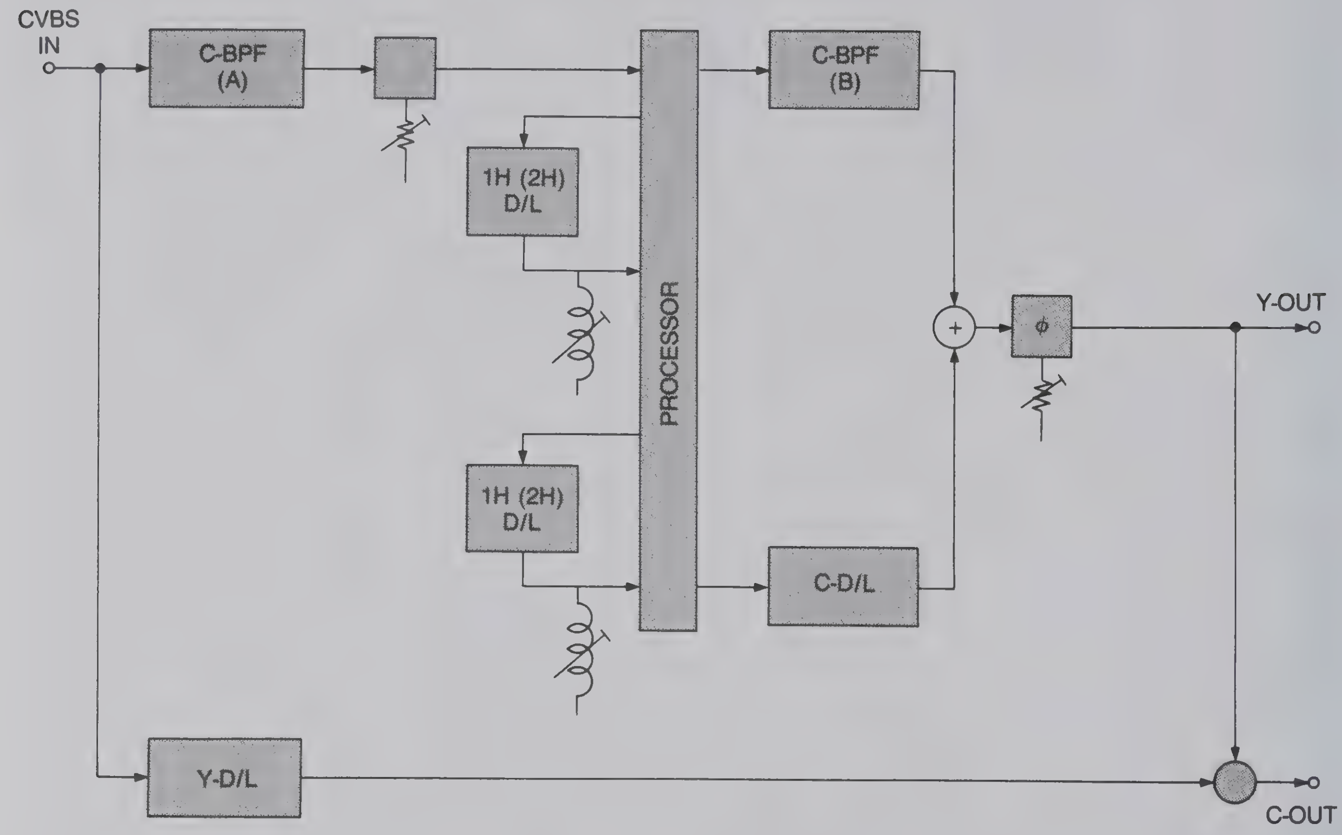
# Y/C SEPARATOR

## Y/C SEPARATOR FOR CTV & S-VHS BLOCK DIAGRAM



### [1] NTSC System

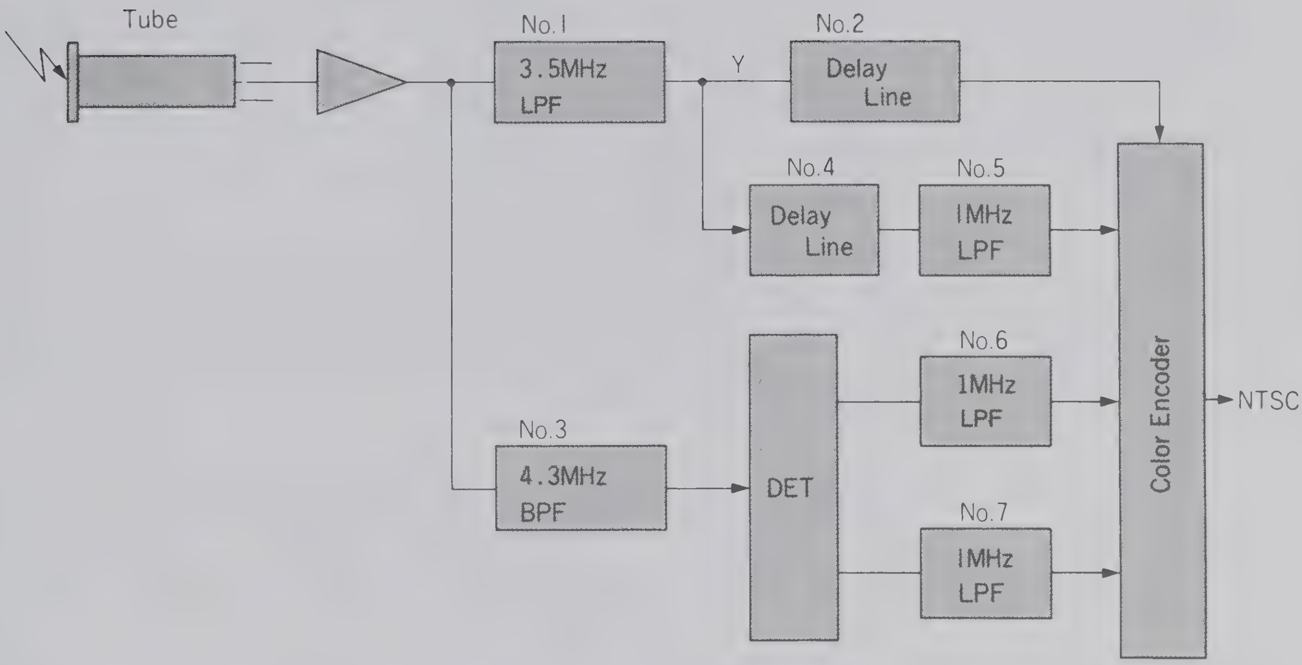
| Purpose | Type | TOKO Part No. | Remarks |
|---|---|---|---|
| Y-D/L | 5VFNP | TG321ENQ-2618PMA | |
| C-BPF (A) | 5VFW | TH314BDKS-2689WMD | |
| C-BPF (B) | 5VFW | TH314BSKS-2747WBD | |
| C-D/L | 5VMP | TH322LSQ-2976MAD | |

### [2] PAL System

| Purpose | Type | Toko P/No. | Remarks |
|---|---|---|---|
| Y-D/L | 5VFNP | TG321ENQ-2618PMA | |
| C-BPF (A) | 5VFW | TH314BDKS-2622WMD | |
| C-BPF (B) | 5VFW | TH314BDIS-2639WAD | |
| C-D/L | 5VMP | TH322LSQ-2976MAD | |

*continued from previous page*

## VIDEO CAMERA



| No. | Use | Type | TOKO Part No. | Remarks |
|---|---|---|---|---|
| 1 | 3.5MHz LPF | 5VSW | H287LSKS-2088HFD<br>or<br>H287LNKS-2071LKD | 250nSEC |
| 2 | 400nSEC D/L | 5VST | H288LNMS-2090TED | |
| 3 | 4.3MHz BPF | 5VUS | H286BAIS-2054DAD<br>or<br>H286BAIS-2085DDD | 3.58MHz |
| 4 | 180nSEC D/L | 5VSW | H287LSKS-2089HFD | |
| 5 | 1 MHz LPF | 5VUS | H286LBIS-2086DAD | |
| 6 | // | // | // | |
| 7 | // | // | // | |

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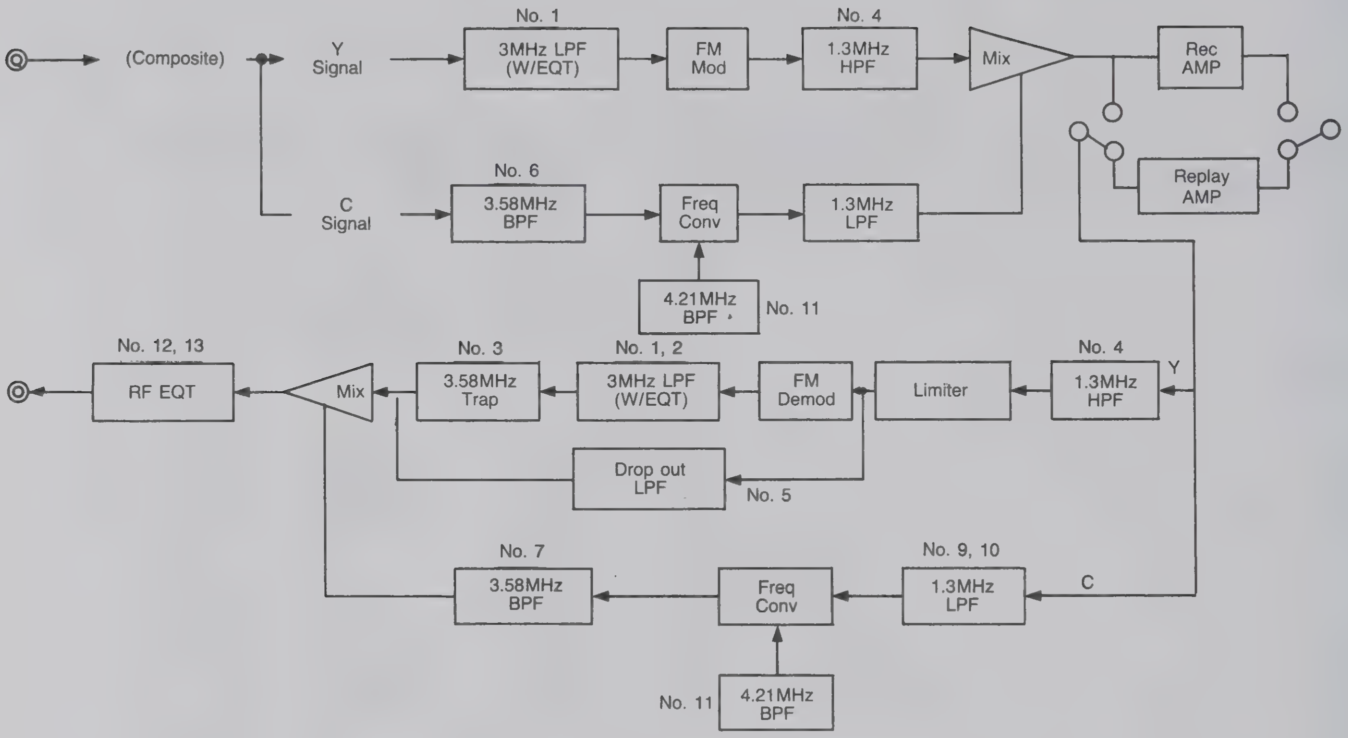
# VHS NTSC SYSTEM



| Purpose & No. | | | 5VU series, Etc. | | 5VF series | | Remarks |
|---|---|---|---|---|---|---|---|
| | | | Type | TOKO Part No. | Type | TOKO P/N | |
| Luminanee | Y-LPF | 1 | 5VNT | H290LNMN-3296TTD | 5VFNT | 5VFNT-1070 | |
| | | 2 | | | 5VFNQ | 5VFNQ-1179 | HiFi PB |
| | 3.58MHz TRAP | 3 | 5VS | TA285TCHS-5049DLD | | | |
| | Y-HPF | 4 | 5VUS | H286HAHS-3312DED | | | |
| | Dropout LPF | 5 | 5VSW | H287LNKS-5040LTD | 5VFW | 5VFW-1167 | |
| Chroma | 3.58MHz BPF | 6 | 5VUS | H286BAIS-5053DCD | | | |
| | | 7 | 5VSW | H287BSKS-5054JDD | 5VFW | 5VFW-1170 | |
| | C-LPF | 8 | 5VUS | H286LAIS-5055DDD | | | |
| | | 9 | 5VUS | H286LAIS-4793DDD | | | |
| | | 10 | 5VUS | H286LHIS-4639DDD | | | HiFi PB |
| | 4.21MHz BPF | 11 | 5VSW | H287BNKS-5064LQE | 5VFW | 5VFW-1175 | |
| Others | RF EQT | 12 | 5VUS | G286EAIS-5061DFS | | | |
| | | 13 | 5VSW | G287ENKS-5060LAD | 5VFW | 5VFW-1017 | |
| HiFi Audio & Audio | 12KHz LPF | | ABW07 | 257BLR-3918N | | | |
| | | | 10PD | 253AGGS-1066 | | | |
| | 20KHz LPF | | ABW07 | A257BLV-4087N | | | |
| | 1.3MHz BPF | | 5VST | H288BTKS-5057PPD | 5VFT | 5VFT-1176 | |
| | 1.7MHz BPF | | 5VST | H288BTKS-5058QGD | 5VFT | 5VFT-1177 | |

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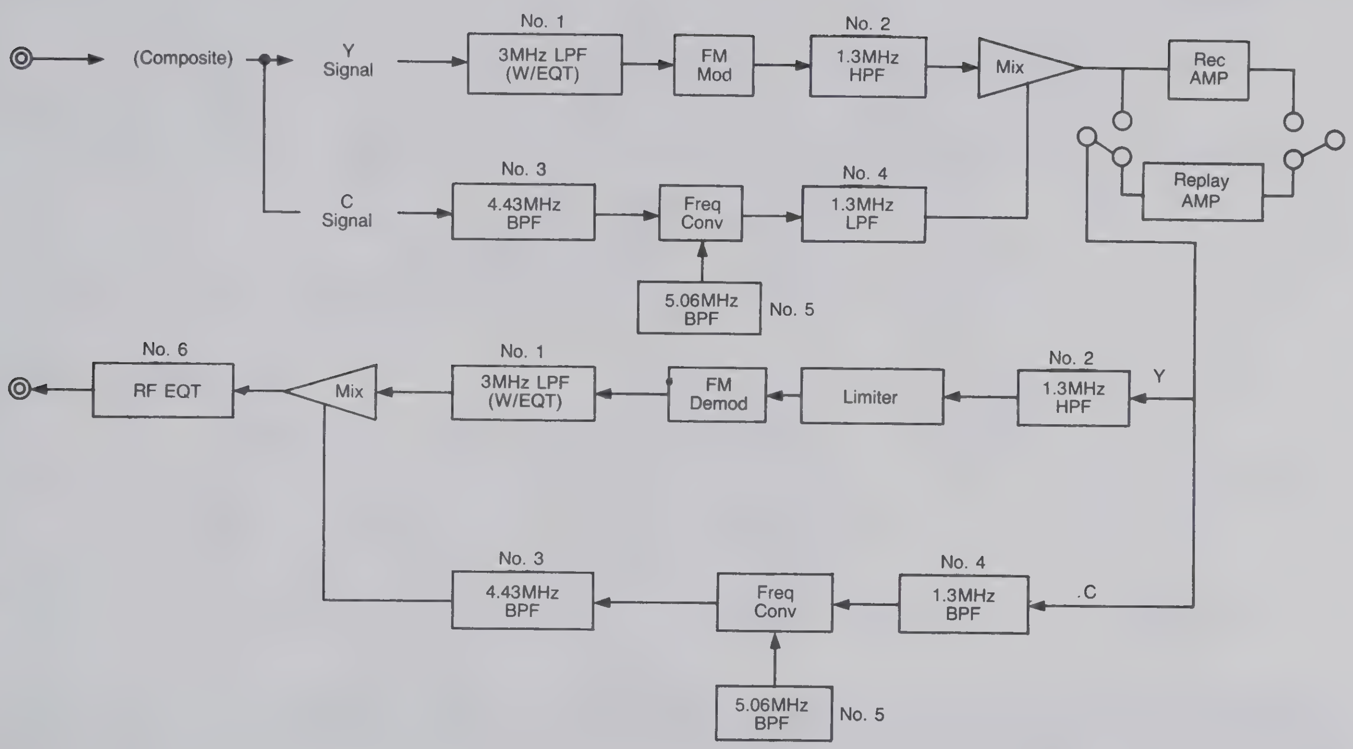
# VHS PAL SYSTEM

## ■BLOCK DIAGRAM



| Purpose & No. | | | 5VL/5VU series, Etc. | | 5VF series | |
|---|---|---|---|---|---|---|
| | | | Type | TOKO Part No. | Type | TOKO P/N |
| Luminance | Y-LPF | 1 | 5VNT | H290LNMN-3296TTD | 5VFNT | 5VFNT-1070 |
| | | | | | 5VMP | 5VMP-1072 |
| | | | | | 5VFP | 5VFP-1120 |
| | | | 5VSR | H288LNLS-4769TTD | | |
| | Y-HPF | 2 | 5VUS | H286HAHS-3312DED | | |
| Chroma | 4.43MHz BPF | 3 | 5VSW | H287BSKS-4968JDD | 5VFW | 5VFW-1154 |
| | | | | | 5VFT | 5VFT-1071 |
| | | | 5VUS | H286BAIS-4963DAD | | |
| | C-LPF | 4 | 5VUS | H286LAIS-2574DDD | | |
| | | | 5VUS | H286LAIS-3486DDD | | |
| | 5.06MHz BPF | 5 | 5VSW | H287BNKS-4901LQE | 5VFW | 5VFW-1069 |
| | | | 5VSW | H287BSKS-4595HAE | | |
| Others | RF EQT | 6 | 5VLW | G327ENKS-1234LAD | 5VFW | 5VFW-1031 |
| HiFi Audio & Audio | 12KHz LPF | | ABW07 | 257BLR-3918N | | |
| | | | 10PD | 253AGGS-1066 | | |
| | 20KHz LPF | | ABW07 | A257BLV-4087N | | |
| | 1.4MHz BPF | | 5VLT | H328BTKS-1250PPD | 5VFT | 5VFT-1121 |
| | 1.8MHz BPF | | 5VLT | H328BTKS-1251QGD | 5VFT | 5VFT-1122 |

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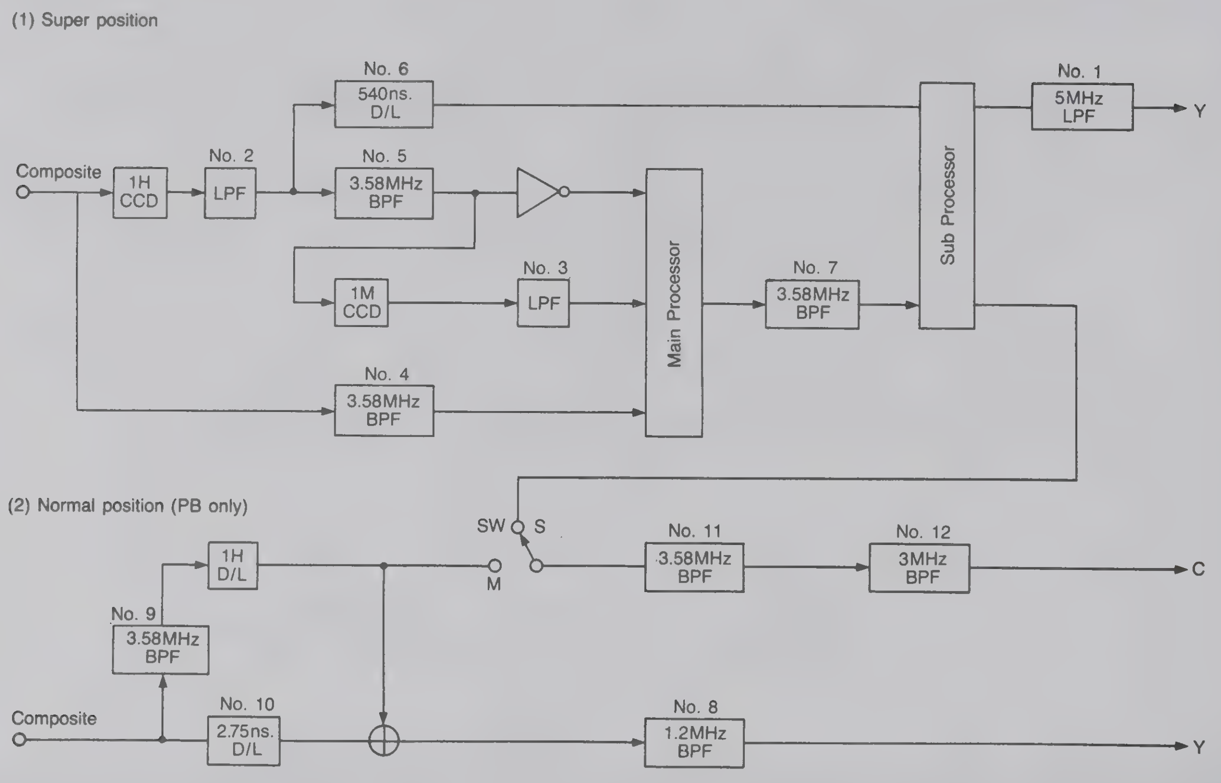
# S-VHS NTSC SYSTEM

## ■BLOCK DIAGRAM



**RECOMMENDED LC FILTERS**

| Purpose & No. | | Type | TOKO Part No. | Position | |
|---|---|---|---|---|---|
| | | | | S-VHS | N-VHS |
| Y-LPF | 1 | 5VFNO | TH424LTUN-24500AC | ○ | |
| CCD LPF | 2 | 5VFT | H315LSMS-2797TAD | ○ | |
| | 3 | 5VFNQ | TH320LSN-2798QCD | ○ | |
| 3.58MHz BPF | 4 | 5VUS | H286BAIS-10303DAD | ○ | |
| | 5 | 5VUS | H286BAIS-11042DAD | ○ | |
| 540ns. D/L | 6 | 5VMP | TH322LNP-2800MAAF | ○ | |
| 3.53MHz BPF | 7 | 5VFW | TH314BDIS-2801WAD | ○ | |
| Y-LPF | 8 | 5VST | H288LSLS-8461TRD | | ○ |
| 3.58MHz BPF | 9 | 5VUS | H286BAIS-9372DAD | | ○ |
| 275ns. D/L | 10 | 5VFNT | G319ENM-2038TBD | | ○ |
| 3.58MHz BPF | 11 | 5VSW | H287BSJS-9941JBD | | ○ |
| 1.2MHz LPF | 12 | 5VUS | H286LAIS-9697DDD | | ○ |
| Y-LPF | 13 | 5VFNP | H321LNP-2162PHD | ○ | |
| | 14 | 5VMP | H322LSQ-2032MAD | ○ | |

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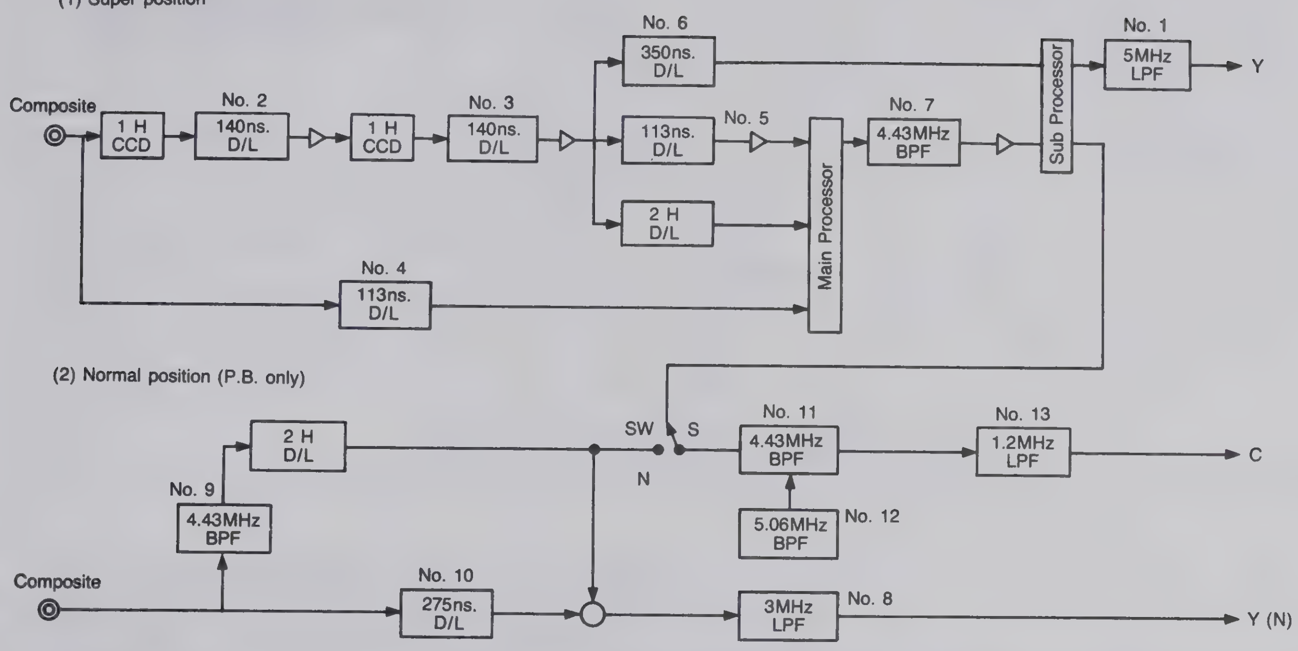
# S-VHS PAL SYSTEM

## ■BLOCK DIAGRAM

(1) Super position

(2) Normal position (P.B. only)



| Purpose & No. | | Type | TOKO Part No. | Position | |
|---|---|---|---|---|---|
| | | | | S-VHS | N-VHS |
| Y-LPF | 1 | 5VFNO | TH424LTUN-24500AC | ○ | |
| 140ns. D/L | 2 | 5VFW | H314LSKS-2451WAD | ○ | |
| | 3 | 5VFW | Ditto | ○ | |
| 113ns. D/L | 4 | 5VFQ | G316EQKS-2452QEJ | ○ | |
| | 5 | 5VFQ | G316EQKS-2452QEJ | ○ | |
| 350ns. D/L | 6 | 5VFNQ | G320ENO-2453QDD | ○ | |
| 4.43MHz BPF | 7 | 5VFW | H314BDIS-2454WAD | ○ | |
| Y-LPF | 8 | 5VFNQ | H320LSO-2286QCD | | ○ |
| 4.43MHz BPF | 9 | 5VFW | H314BDIS-2454WAD | | ○ |
| 275ns. D/L | 10 | 5VFNT | G319ENM-2038TBD | | ○ |
| 4.43MHz BPF | 11 | 5VFW | H314BSK-2073WBD | | ○ |
| 5.06MHz BPF | 12 | 5VFW | H314BDKS-1413WDD | | ○ |
| 1.2MHz LPF | 13 | 5VUS | H286LAIS-3486DDD | | ○ |
| Y-LPF | 14 | 5VFNP | H321LNP-2162PHD | ○ | |
| | 15 | 5VMP | H322LSQ-2032MAD | ○ | |

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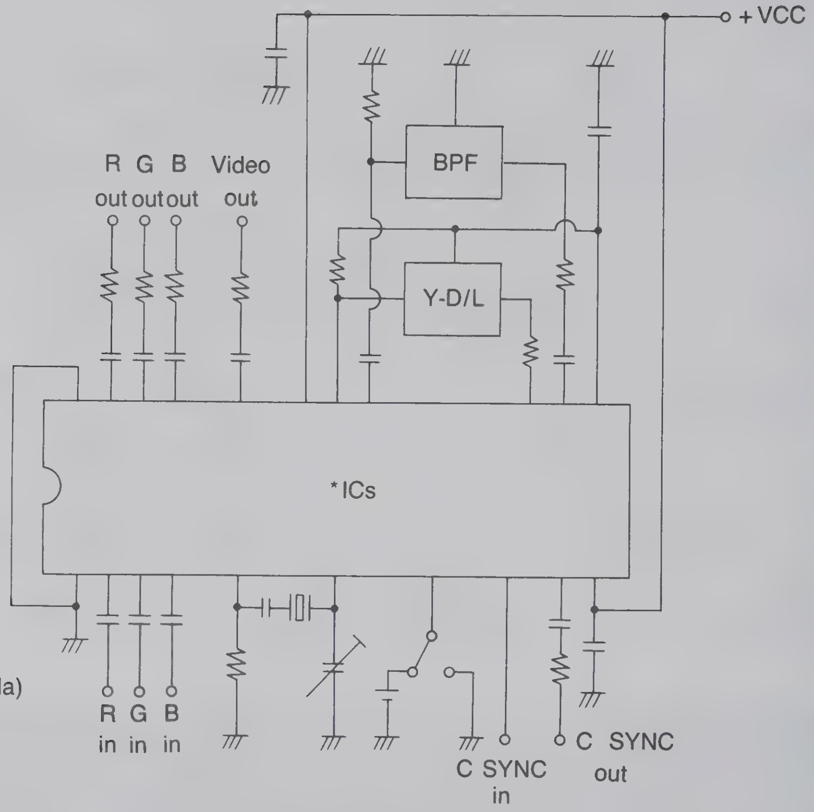
# PAL/NTSC ENCODER

## Application Circuit (Ref. only)



| | | | |
|---|---|---|---|
| *Ref. only | MC1377 | | (Motorola) |
| | CXA1145 | P/M | (Sony) |
| | CXA1219 | P/M | (Sony) |
| | CXA1229 | P/M | (Sony) |
| | V7040 | | (Sony) |

### Sample List

**Application: NTSC System**

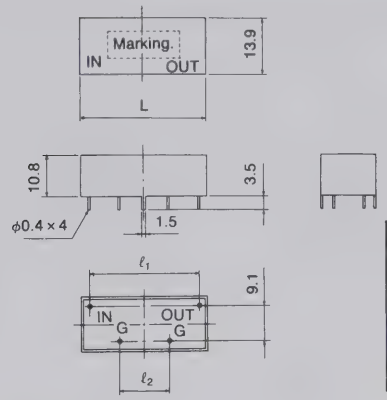
| Purpose | Type | TOKO Part No. | GD TYP. (nsec) | Rin Rout | Remarks |
|---|---|---|---|---|---|
| Y-D/L | 5VFW | TG314ENKS-3255 | 200 | 1000Ω | |
| | 5VFT | TG315ENMS-3251 | 200 | 1000Ω | |
| 3.58MHz BPF | 5VFW | TH314BSJS-3253 | 200 | 1000Ω | |

**Application: PAL System**

| Purpose | Type | TOKO Part No. | GD TYP. (nsec) | Rin Rout | Remarks |
|---|---|---|---|---|---|
| Y-D/L | 5VFW | TG314ENKS-3255 | 200 | 1000Ω | |
| | 5VFT | TG315ENMS-3251 | 200 | 1000Ω | |
| | 5VFT | TG315ENMS-3252 | 300 | 1000Ω | |
| | 5VSW | H287LSKS-10570 | 380 | 1000Ω | W/Trap |
| 4.43MHz BPF | 5VFW | TH314BSJS-3254 | 200 | 1000Ω | |
| | 5VUS | TH286BAIS-12424 | 300 | 1000Ω | |
| | 5VFW | H314BNKS-2612 | 380 | 1000Ω | |

## Precision LC Video Filters 5VZS

*5 - 15MHz LPF*
*300 - 600ns. Delay Line*

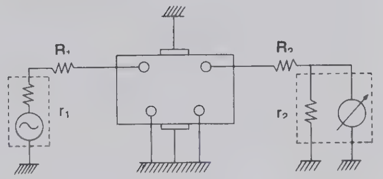


| Coil (pcs) | L | $l_1$ | $l_2$ |
|---|---|---|---|
| 8 | 25.0 | 20.0 | 3.2 |
| 10 | 30.8 | 25.8 | 9.0 |
| 12 | 36.6 | 31.6 | 14.8 |
| 14 | 42.4 | 37.4 | 20.6 |

### Quality Features:

- These filters were specially designed for very precise amplitude and group delay characteristics, with deviation less than 3%.
- The application is suitable for broadcast video type equipment.
- These filters are available as low pass filters and delay lines.
- Four terminal, metal shielded construction.

**Test circuit**



$R_{in} = R_1 + r_1$
$R_{in} = R_1 + r_2$
$(r_1 = r_2 = 75\Omega)$

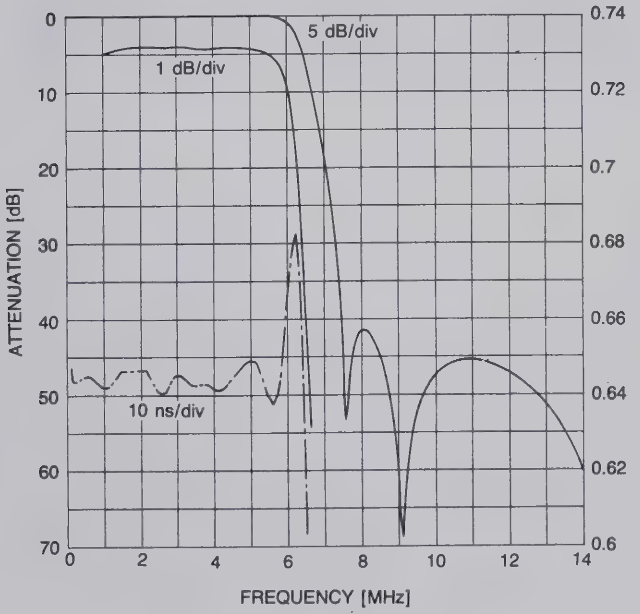
## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design manufacture modified and custom devices to meet your requirements. If you do not find the device for your application, please contact our sales office or representative office.

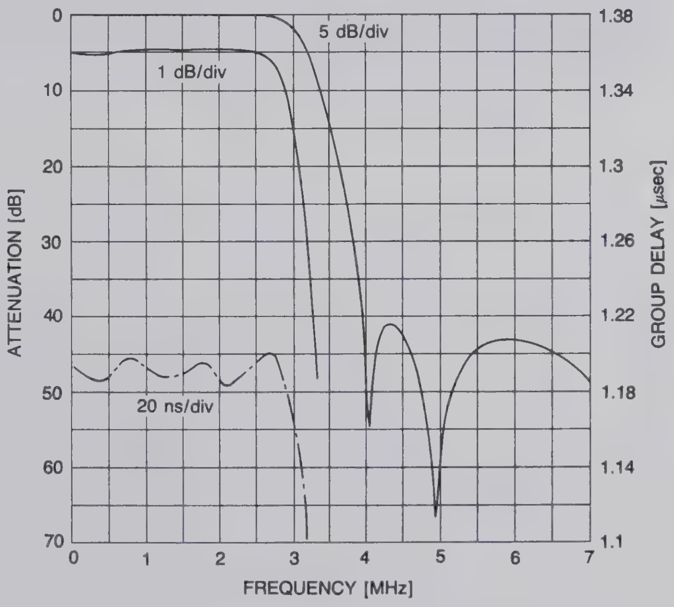
### TYPE 5VZ

| TOKO Part Number | Function | Impedance |
|---|---|---|
| 5VZS-1011 | 5.75MHz LPF | 330Ω |
| 5VZS-1012 | 2.75MHz LPF | 330Ω |

**5VZS-1011**

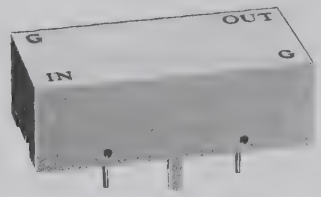


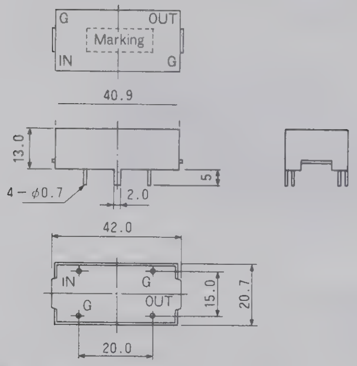
**5VZS-1012**



## High Definition Video Filters

***5 - 36MHz LPF***
***300 - 600ns. Delay Line***

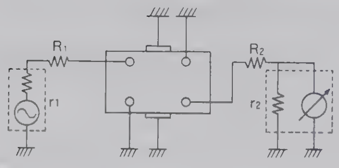




## *Quality Features:*

- These filters were specially designed for very precise amplitude and group delay characteristics, with deviation less than 1%.
- The application is suitable for broadcast video type equipment.
- These filters are available as low pass filters and delay lines.
- Four terminal, metal shielded construction.
- Available in high frequency designs, up to 36MHz.

Test Circuit



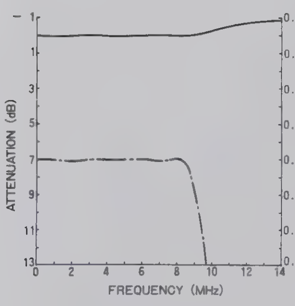
$R_{in} = R_1 + r_1$
$R_{out} = R_2 + r_2$
$(r_1 = r_2 = 75\Omega)$

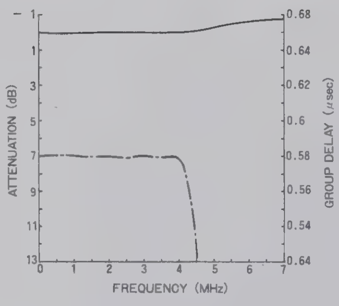
## STANDARD DEVICES SELECTION GUIDE

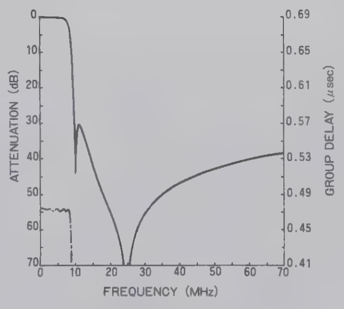
The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design manufacture modified and custom devices to meet your requirements. If you do not find the device for your application, please contact our sales office or representative office.

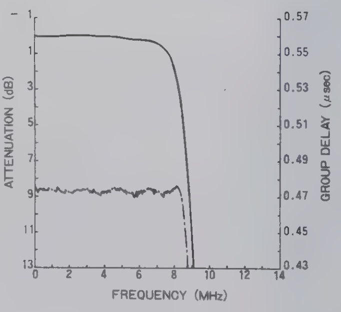
### *TYPE HBF*

| TOKO Part Number | Description | Rin & Rout | TOKO Part Number | Description | Rin & Rout |
|---|---|---|---|---|---|
| HBF - 030 | 5MHz LPF | 330Ω | HBF - 016 | 13.5MHz LPF | 150Ω |
| HBF - 013 | 5.5MHz LPF | 330Ω | HBF - 019 | 13.5MHz LPF + APR | 150Ω |
| HBF - 031 | 6MHz LPF | 330Ω | HBF - 037 | 14MHz LPF | 330Ω |
| HBF - 032 | 7MHz LPF | 330Ω | HBF - 014 | 21.5MHz LPF | 150Ω |
| HBF - 009 | 7.5MHz LPF | 150Ω | HBF - 020 | 21.5MHz LPF + APR | 150Ω |
| HBF - 012 | 8.15MHz LPF | 150Ω | HBF - 015 | 36MHz LPF | 150Ω |
| HBF - 033 | 8.5MHz LPF | 330Ω | HBF - 038 | 300ns DL | 330Ω |
| HBF - 034 | 10MHz LPF | 330Ω | HBF - 039 | 400ns DL | 330Ω |
| HBF - 035 | 11MHz LPF | 330Ω | HBF - 040 | 500ns DL | 330Ω |
| HBF - 036 | 12MHz LPF | 330Ω | HBF - 041 | 600ns DL | 330Ω |





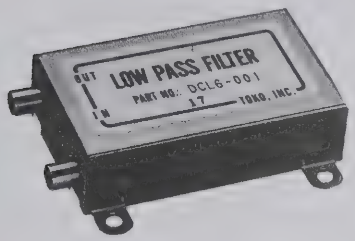




## High Definition Video Filters DCL6 & DCL8

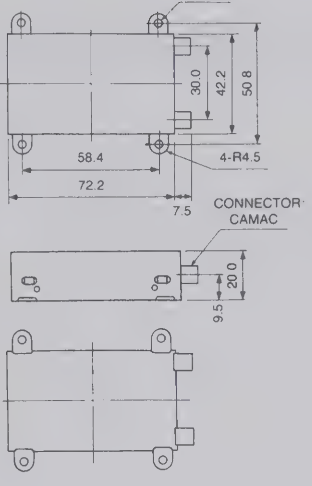
*5 - 50MHz LPF*
*300 - 600ns. Delay Line*

**DCL6**

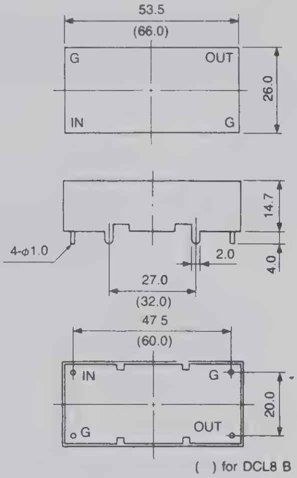


**DCL8**

**DCL6 Series**



**DCL8A, and -B Series**



( ) for DCL8 B

### *Quality Features:*

- These filters were specially designed for very precise amplitude and group delay characteristics, with deviation less than 0.5%.
- The application is suitable for broadcast video type equipment, or High Definition TV.
- These filters are available as low pass filters and delay lines.
- Four terminal, metal shielded construction.
- Group delay variation within pass band is 5-15 nsec.
- Available in high frequency designs, up to 50MHz.

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design manufacture modified and custom devices to meet your requirements. If you do not find the device for your application, please contact our sales office or representative office.

### *TYPE DCL6*

| TOKO Part Number | Function | Impedance |
|---|---|---|
| DCL6-013 | 5.75MHz LPF (Y-Pri) | 75Ω |
| DCL6-014 | 5.75MHz LPF (Y-Post) | 75Ω |
| DCL6-015 | 2.75MHz LPF (Y-Pri) | 75Ω |
| DCL6-016 | 2.75MHz LPF (C-Post) | 75Ω |

### *TYPE DCL8*

| TOKO Part Number | Function | Impedance |
|---|---|---|
| DCL8B-026 | 30 MHz LPF (Y-Post) | 75Ω |
| DCL8B-028 | 15 MHz LPF (C-Post) | 75Ω |
| DCL8B-024 | 5.75MHz LPF (Y-Post) | 75Ω |
| DCL8A-022 | 46 MHz LPF (Ap ) | 75Ω |

Fig. 1 DCL6-013 5.75 MHz (Y-Pri)

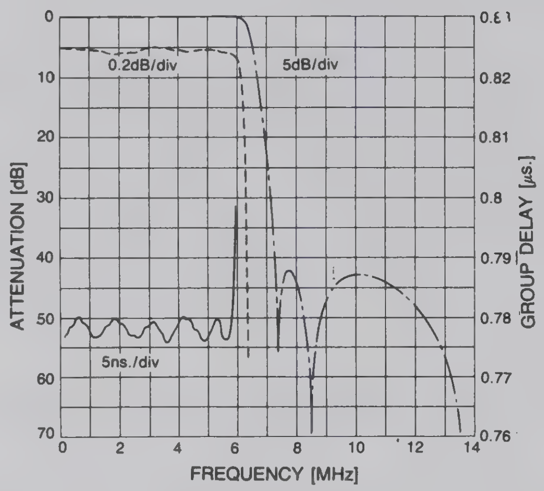


Fig. 2 DCL6-014 5.75 MHz (Y-Post)

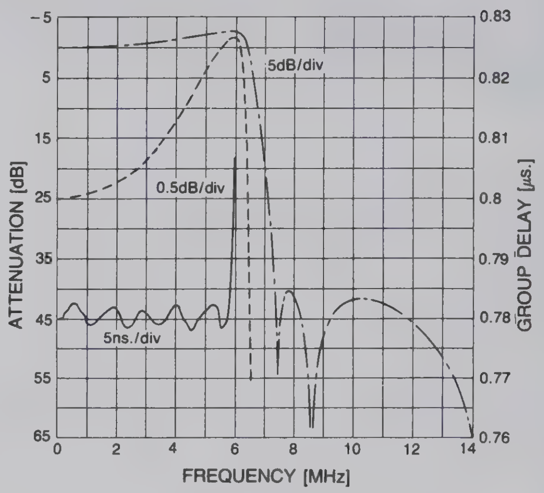


Fig. 3 DCL6-015 2.75 MHz (C-Pri)

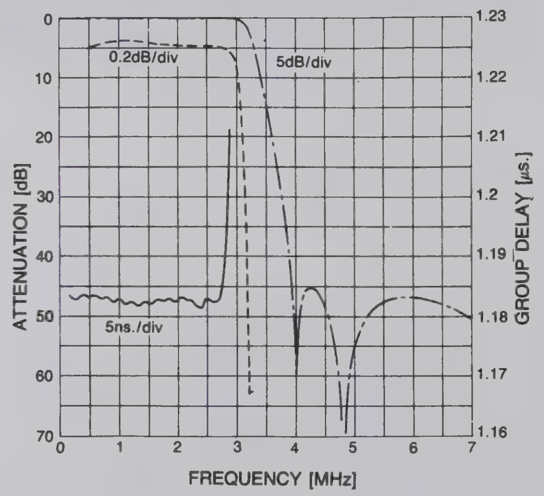


Fig. 4 DCL6-016 2.75 MHz (C-Post)

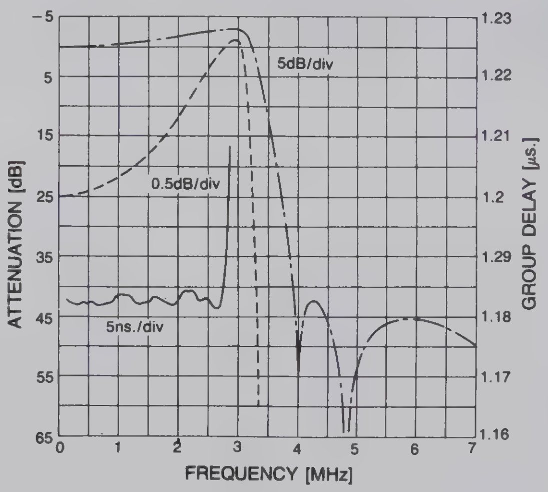


Fig. 5 DCL8-026 30 MHz (Y-Post)

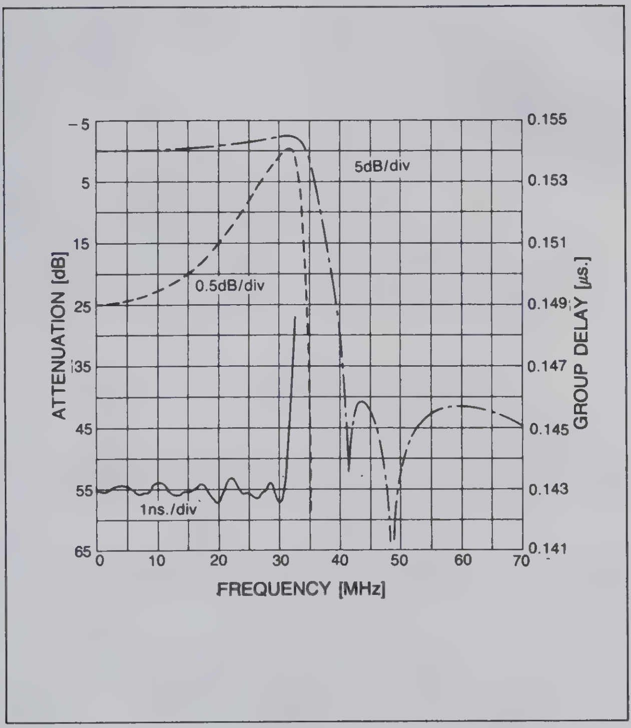


Fig. 6 DCL8-028 15 MHz (Post)

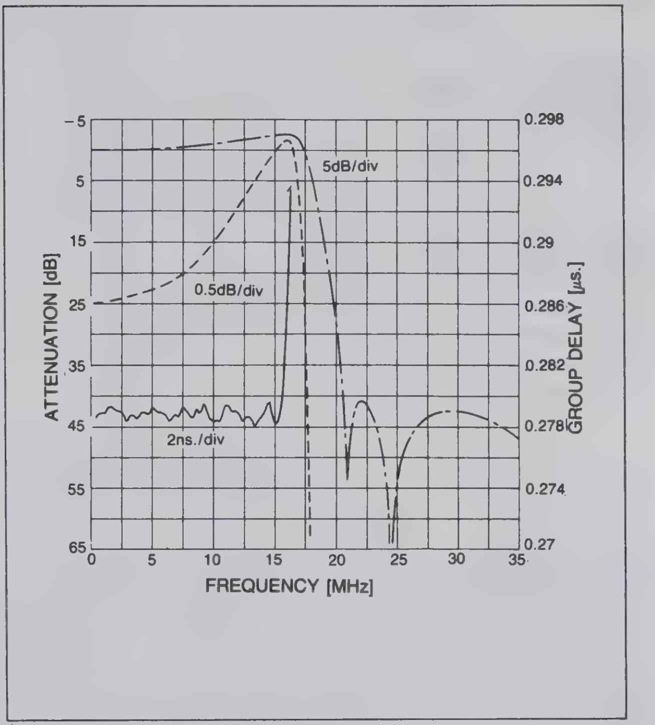


Fig. 7 DCL8B-024 5.75 MHz (Y-Post)

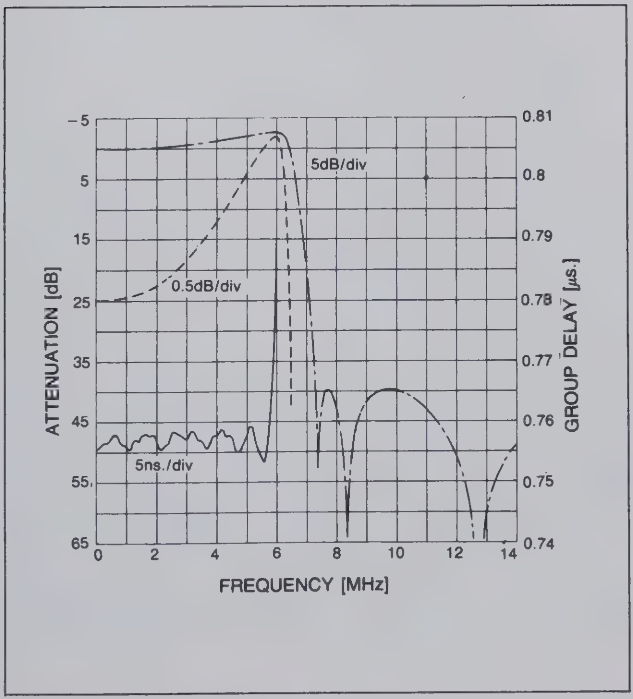
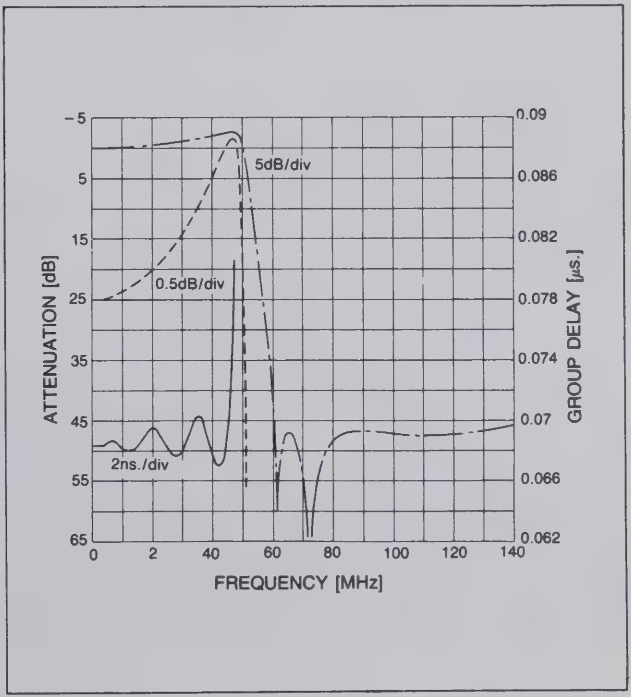


Fig. 8 DCL8A-022 46 MHz (w/aperture)

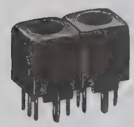


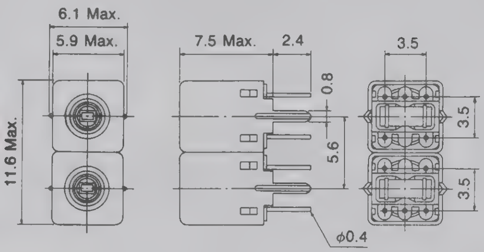
# TYPE 5KMW 5KMT

## High Frequency LC Filters
## 5KMW Double Tuned Filter
## 5KMT Triple Tuned Filter

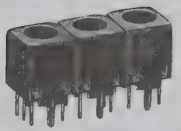
***Frequency Range:*** 30～200MHz

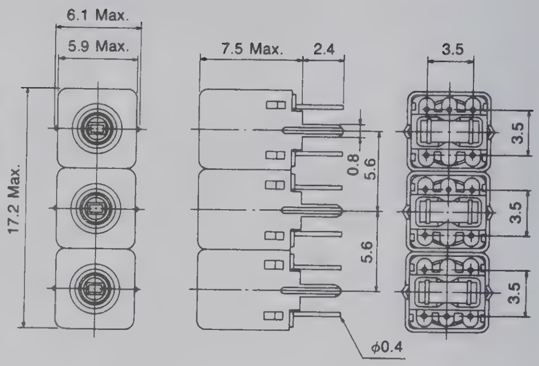
**5KMW**





**5KMT**





## *Quality Features:*

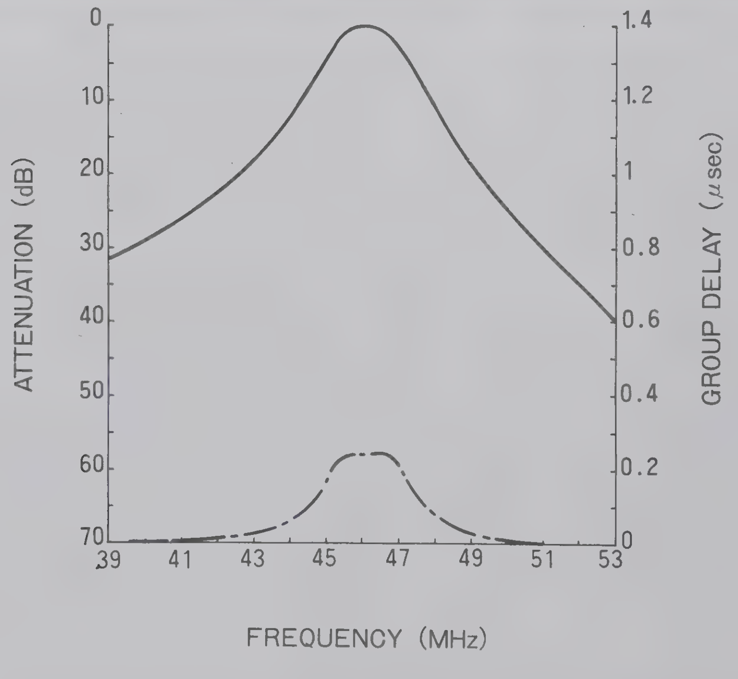
- Low profile, only 7.0mm (typical) high.
- Available up to 3 coils for extended performance.
- Ideal for LAN, RF transceiver, cordless phone, CATV, satellite, data transmission, low, high, and band pass filters and other applications requiring high Q, typically 40～70.

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application, please contact our sales office or representative office.

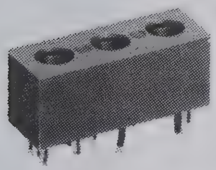
### *Band Pass Filter*

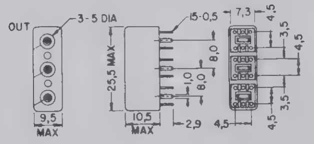
| TOKO Part Number | Type | Center Freq. (MHz) | Bandwidth (MHz) | I/O Impedance (ohm) |
|---|---|---|---|---|
| 5KMW-002 | 5KMW | 46 | 2 typ. (−3 dB) | 75/75 |
| 5KMW-003 | 5KMW | 50.4 | 2 typ. (−3 dB) | 75/75 |
| 5KMT-007 | 5KMT | 156 | 8 min. (−1 dB) | 50/50 |
| 5KMT-009 | 5KMT | 144 | 9 min. (−1 dB) | 50/50 |
| 5KMT-020 | 5KMT | 9.6 | 0.6 min. (−3 dB) | 50/50 |
| 5KMT-034 | 5KMT | 45 | 0.8 min. (−3 dB) | 330/330 |



# 7KLT High Frequency LC Filters
## *Triple Tuned*

***Frequency Range:*** 10MHz-150MHz
***Inductance Range:*** 0.1μH-50μH
***Optional Capacitance Values:*** 5-100pF





## *Quality Features:*

- Triple tuned for very high selectivity.
- Low profile, only 10.5mm high.
- Ideal for LAN, RF transceiver, cordless phone, CATV, satellite, TVRO, data transmission, low, high and band pass filter and other applications requiring very high Q, typically 70-100.
- Coil form has many narrow, closely-spaced horizontal slots and four vertical slots to bring windings down to the terminals. This assures minimum stray capacitance and yields a high Q. It also facilitates duplicating the electrical characteristics more precisely for consistent impedance, center frequency, Q and inductance.
- Coil bobbin is very accessible for prototyping.
- Polycarbonate coil forms are designed with an internally "splined" body matched to the tuning slug providing excellent torque control. By maintaining precision tolerances throughout fabrication, TOKO can guarantee the specifications for torque range. Once aligned in the circuit, TOKO coils will maintain characteristics during the PCB assembly process. Locking screws thus can be eliminated.
- Terminals feature rounded ends to facilitate PCB insertion and presoldered to ensure a reliable PCB connection.
- One piece construction makes these coils highly resistant to shock, vibration, humidity and temperature change.
- Expose base to minimal heat during wave soldering. Consult TOKO AMERICA if using other than freon cleaning solvents.

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

### *Band Pass*

| TOKO Part Number | Center Frequency (MHz) | Bandwidth (MHz) | Impedance (Ω) |
|---|---|---|---|
| 335BXS-0050 | 10 | 1.5(3dB) | 330/330 |
| 335BBX-0113 | 25.5 | 1.5(3dB) | 50/50 |
| 335BBRS-0034 | 43 | 5.5(1dB) | 75/75 |
| 335BBXS-0053 | 44 | 12 (1dB) | 50/50 |
| 335BBV-0223 | 46.8 | 0.4(3dB) | 50/50 |
| 335BBV-0224 | 49.8 | 0.4(3dB) | 50/50 |
| 335BBXS-0054 | 50.75 | 8 (1dB) | 75/75 |
| 335BBV-0018 | 70 | 20 (1dB) | 75/75 |
| 335BBXS-0055 | 77.2 | 6 (3dB) | 50/50 |
| 335BBXS-0056 | 83.2 | 6 (3dB) | 50/50 |
| 335BBXS-0057 | 88.9 | 6 (3dB) | 50/50 |
| 335BPV-0038 | 130 | 20 (1dB) | 75/75 |

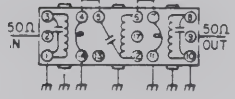
### *Low Pass & High Pass Filters*

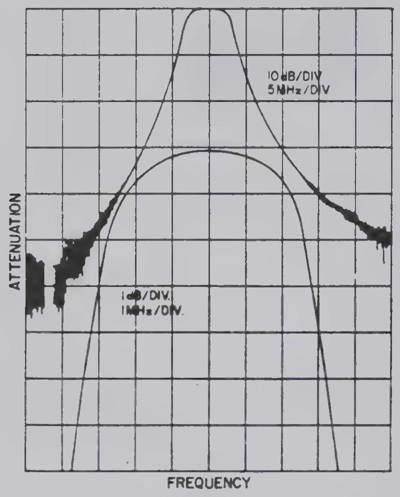
| TOKO Part Number | Cutoff Frequency (MHz) | 1st Pole Frequency (MHz) | Stopband Attenuation (dB) | Impedance (Ω) |
|---|---|---|---|---|
| 335BHX-0048 | 56 | 45 | 35 | 75/75 HPF |
| 335BHX-0046 | 60 | 49 | 35 | 75/75 HPF |
| 335BLV-0112 | 80 | 100 | 40 | 50/50 LPF |
| 335BLX-0047 | 80 | 90 | 30 | 75/75 LPF |
| 335BLX-0049 | 84 | 95 | 25 | 75/75 LPF |

*continued on next page*

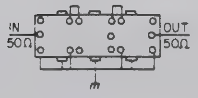
*continued from previous page*

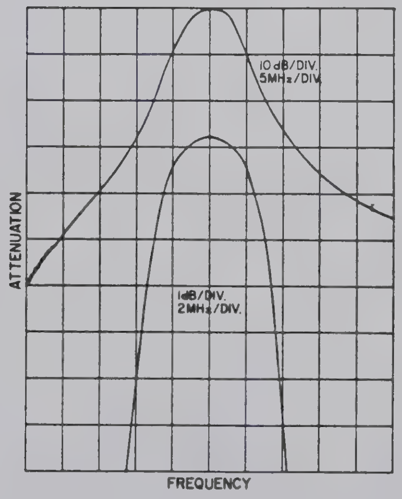
**335BXS-0055**





**335BBXS-0057**



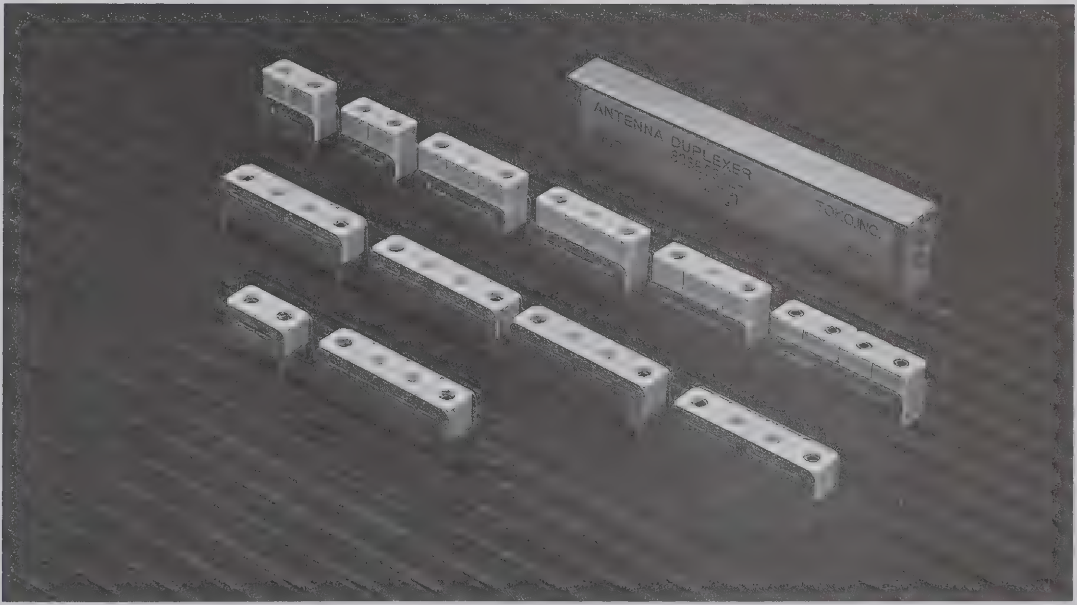


# DIELECTRIC FILTERS

TOKO dielectric resonator filters are high "Q" filters constructed of a high dielectric constant ceramic material. The filters are formed by coupling the ceramic sections (poles). TOKO designs are available in two through six poles. The selectivity of the filter increases with additional poles, the lowest loss is provided with the two pole design and increases slightly with each additional pole.

These fixed are fixed tuned devices and the TOKO manufacturing process provides excellent repeatability. Since it is a simple design with no moving parts they provide excellent mechanical stability and reliability. Their low loss and compact design make these filters ideally suited as the band pass filter and antenna duplexer for high frequency rf communications equipment.

TOKO filters are available in frequency ranges from 700 MHz to 1700 MHz. They provide an excellent alternative to cavity filters, saw filters, and helical filters. TOKO has developed standard parts particularly for cellular phones, spread sprectrum receivers, loran, global positioning systems (GPS) and the new generation of cordless phones (CT2).



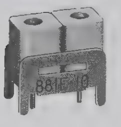
**TOKO**

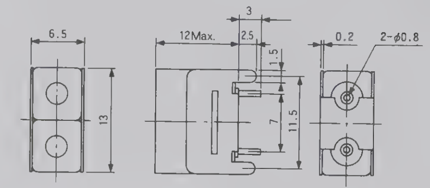
TOKO AMERICA, INC.

## 6DFA (2 Pole Type)
## 6DFB (3 Pole Type)

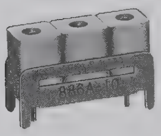
***Frequency Range:*** 800MHz-1500MHz
***Temperature Range:*** −25°C to +85°C

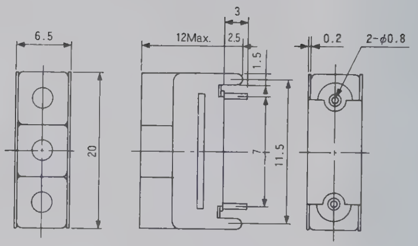
**6DFA**





**6DFB**





### *Quality Features:*

- Utilizing TOKO's unique design technology, a high dielectric constant and high Q ceramic material was developed and applied to miniaturize these high frequency band pass filters. Most suitable for 800MHz-900MHz land-mobiles, cellular telephones and CATV application.
- Low insertion loss. High selectivity and High reliability.

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please contact our sales office or representative office.

### *TYPE 6DFA*
### *US-CELLULAR/UK-TACS/NMT900*

| TOKO Part Number | Center Freq. Fo (MHz) | Bandwidth (MHz) | Insertion Loss in BW (dB) max. | Ripple in BW (dB) max. | V.S.W.R. in BW max. | Attenuation (dB) min. |
|---|---|---|---|---|---|---|
| 6DFA-836E-10 | 836.5 | Fo±12.5 | 1.8 | 0.8 | 2.0 | 20 (Fo±77.5MHz) |
| 6DFA-881E-11 | 881.5 | Fo±12.5 | 1.8 | 0.8 | 2.0 | 20 (Fo±77.5MHz) |
| 6DFA-902E-12 | 902.5 | Fo±12.5 | 1.8 | 0.8 | 2.0 | 20 (Fo±77.5MHz) |
| 6DFA-947E-13 | 947.5 | Fo±12.5 | 1.8 | 0.8 | 2.0 | 20 (Fo±77.5MHz) |

### *Cordless Telephone Use*

| TOKO Part Number | Center Freq. Fo (MHz) | Bandwidth (MHz) | Insertion Loss in BW (dB) max. | Ripple in BW (dB) max. | V.S.W.R. in BW max. | Attenuation (dB) min. |
|---|---|---|---|---|---|---|
| 6DFA-914A-14 | 914.5 | Fo±0.5 | 2.2 | 0.5 | 1.8 | 24 (Fo±45MHz) |
| 6DFA-959A-15 | 959.5 | Fo±0.5 | 2.2 | 0.5 | 1.8 | 24 (Fo±45MHz) |

### *TYPE 6DFB*
### *US-CELLULAR/UK-TACS/NMT900*

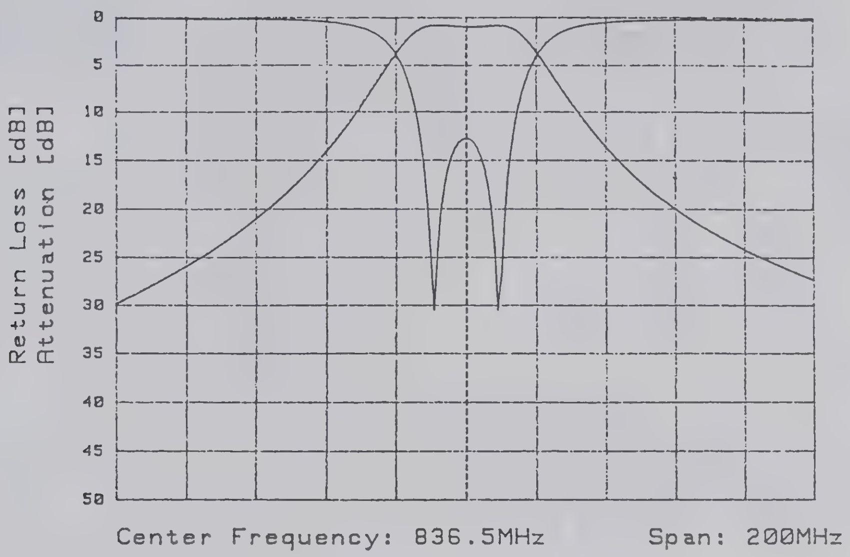
| TOKO Part Number | Center Freq. Fo (MHz) | Bandwidth (MHz) | Insertion Loss in BW (dB) max. | Ripple in BW (dB) max. | V.S.W.R. in BW max. | Attenuation (dB) min. |
|---|---|---|---|---|---|---|
| 6DFB-836E-10 | 836.5 | Fo±12.5 | 2.0 | 0.8 | 2.0 | 12 (Fo±32.5MHz) |
| 6DFB-881E-11 | 881.5 | Fo±12.5 | 2.0 | 0.8 | 2.0 | 12 (Fo±32.5MHz) |
| 6DFB-902E-12 | 902.5 | Fo±12.5 | 2.0 | 0.8 | 2.0 | 12 (Fo±32.5MHz) |
| 6DFB-947E-13 | 947.5 | Fo±12.5 | 2.0 | 0.8 | 2.0 | 12 (Fo±32.5MHz) |

### *Cordless Telephone Use*

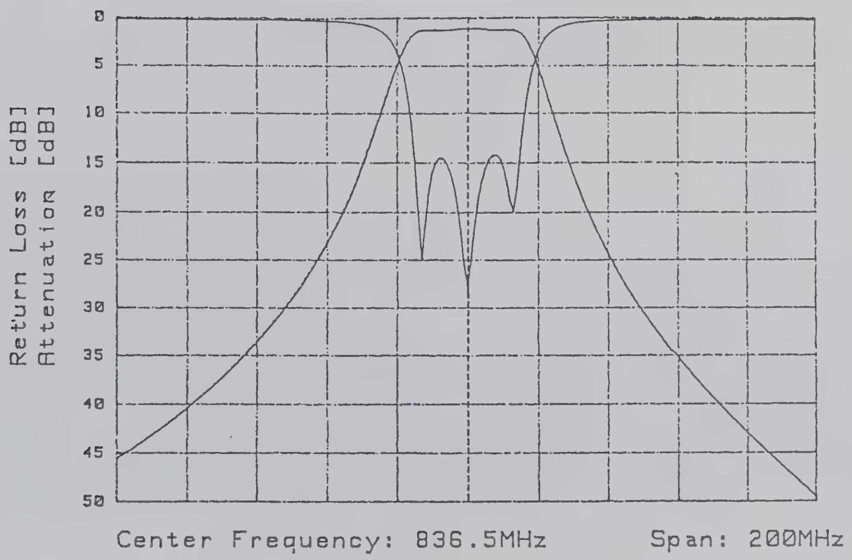
| TOKO Part Number | Center Freq. Fo (MHz) | Bandwidth (MHz) | Insertion Loss in BW (dB) max. | Ripple in BW (dB) max. | V.S.W.R. in BW max. | Attenuation (dB) min. |
|---|---|---|---|---|---|---|
| 6DFB-914A-14 | 914.5 | Fo±0.5 | 4.0 | 0.5 | 2.0 | 45 (869.5MHz)<br>55 (959.5MHz) |
| 6DFB-959A-15 | 959.5 | Fo±0.5 | 4.0 | 0.5 | 2.0 | 45 (914.5MHz)<br>55 (1004.5MHz) |

## TYPICAL RESPONSE WAVES

### 6DFA TYPE



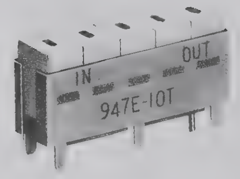
### 6DFB TYPE

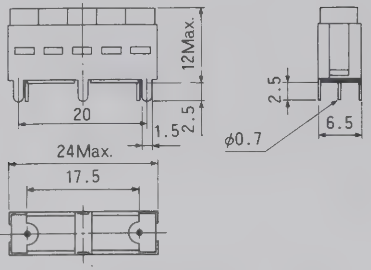


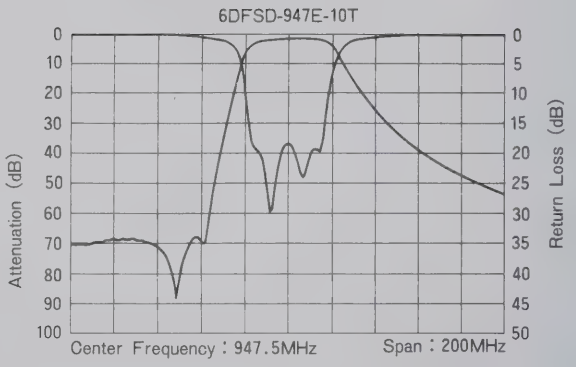
## 6DFSD (5 pole Type)

***Frequency Range:*** 800MHz-1500MHz
***Temperature Range:*** −25°C to +85°C

**6DFSD**







## *Quality Features:*

- Utilizing TOKO's unique design technology, a high dielectric constant and high Q ceramic material was developed and applied to miniaturize these high frequency band pass dielectric filters. Most suitable for 800MHz-900MHz landmobiles, cellular telephones and CATV application.
- Low insertion loss. High selectivity and High reliability.

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please contact our sales office or representative office.

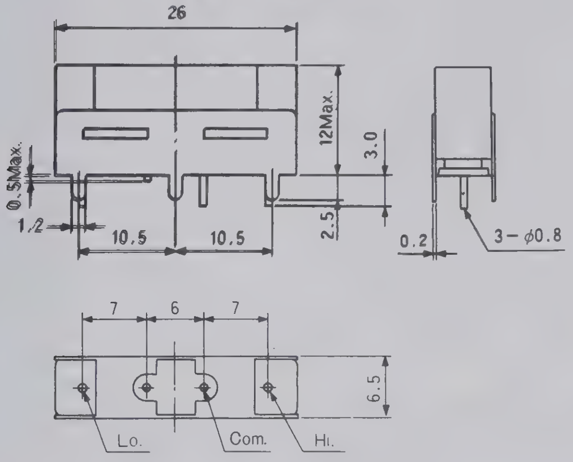
### *TYPE 6DFSD*

| TOKO Part Number | Center Frequency Fo (MHz) | Bandwidth (MHz) | Insertion Loss in BW (dB) max. | Ripple in BW (dB) max. | V.S.W.R. in BW max. | Attenuation (dB) min. |
|---|---|---|---|---|---|---|
| 6DFSD-947E-10T | 947.5 | Fo±12.5 | 3.7 | 1.5 | 1.7 | 53 (at 900MHz) |

## TYPE 6DPD

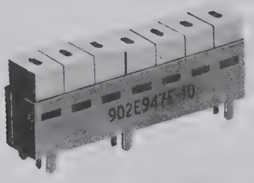
***Frequency Range:*** 800MHz-1500MHz
***Temperature Range:*** −25°C to +85°C

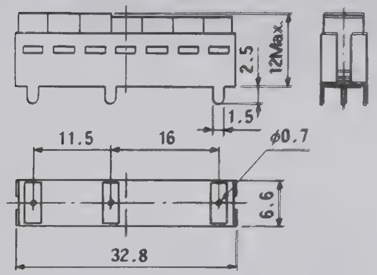
**6DPD**



## TYPE 6DPH

**6DPH**





### *Quality Features:*

- Utilizing TOKO's unique design technology, a high Q ceramic material was developed and applied in TOKO's 6DPH and 6DPD type antenna duplexer. Most suitable for mobile telephones in the 800-900MHz rauge.

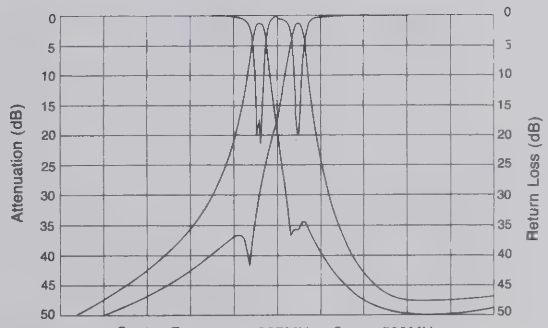
## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please contact our sales office or representative office.

### *Specifications: 6DPD*

| | Transmit Side | Receive Side |
|---|---|---|
| Center Frequency | 914.5MHz | 959.5MHz |
| Passband Width | 1MHz | 1MHz |
| Passband Insertion Loss | 2.2dB max. | 2.2dB max. |
| Passband Ripple | 0.5dB max. | 0.5dB max. |
| Passband V.S.W.R. | 2.0 max. | 2.0 max. |
| Attenuation | | |
| Fo−45MHz | | 25dB min. |
| Fo+45MHz | 25dB min. | |
| Maximum Input Power | 1W | |
| Input/Output Impedance | 50Ω | 50Ω |

6DPD-914A 959A-10

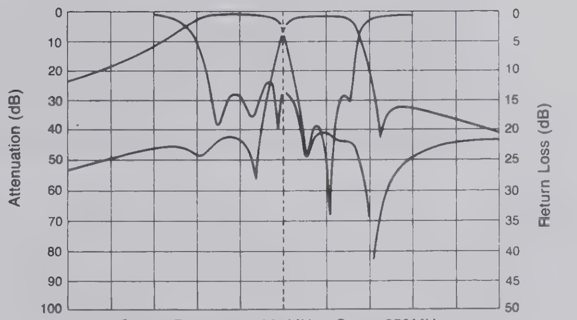


Center Frequency: 937MHz Span: 500MHz

### *Specifications: 6DPH*

| | Transmit Side | Receive Side |
|---|---|---|
| Center Frequency | 902.5MHz | 947.5MHz |
| Passband Width | ±12.5MHz | ±12.5MHz |
| Passband Insertion Loss | 2.2dB max. | 2.5dB max. |
| Passband Ripple | 1.0dB max. | 1.0dB max. |
| Passband V.S.W.R. | 2.0 max. | 2.0 max. |
| Attenuation | | |
| 0.35-960MHz | 30dB min. | |
| 0-915MHz | | 25dB min. |
| Maximum Input Power | 4W (average) | |
| Input/Output Impedance | 50Ω | 50Ω |

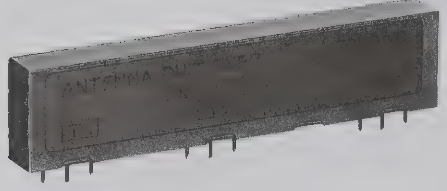
6DPH-902E 947E-10

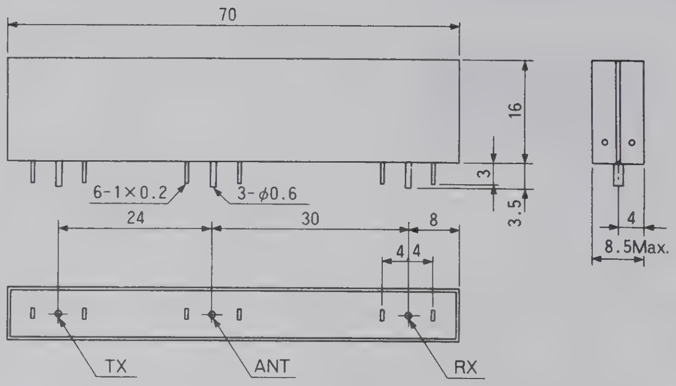


Center Frequency: 925MHz Span: 250MHz

## TYPE 6DPP

***Frequency Range:*** 800MHz-1500MHz
***Temperature Range:*** −25°C to +85°C





*Connector :*

### *Quality Features:*

- Utilizing TOKO's unique design technology, a high Q ceramic material was developed and applied in the design of TOKO's 6DPP type antenna duplexer. Most suitable for mobile telephones in the 800-900MHz range.

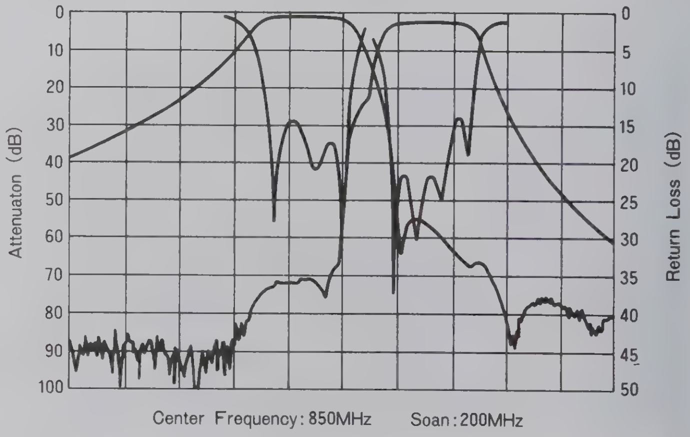
## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please contact our sales office or representative office.

### *Specifications*

| | Transmit Side | Receive Side |
|---|---|---|
| Center Frequency | 836.5MHz | 881.5MHz |
| Passband Width | ±12.5MHz | ±12.5MHz |
| Passband Insertion Loss | 2.3dB max. | 2.6dB max. |
| Passband Ripple | 0.9dB max. | 1.2dB max. |
| Passband V.S.W.R. | 1.7 max. | 1.7 max. |
| Attenuation<br>at 824MHz-849MHz<br>at 869MHz-894MHz | 43dB min. | 60dB min. |
| Maximum Input Power | 6W | |
| Input/Output Impedance | 50Ω | 50Ω |

**Test Data of Antenna Duplexer**
Part No.: 6DPP 836E881E-11



# SURFACE ACOUSTIC WAVE (SAW) FILTERS

TOKO's new SWS Series of SAW filters offer high Q's, low insertion losses, and extreme electrical/mechanical stability and repeatability. Miniature in size, TOKO SAW filters mean savings in PCB real estate and product size.

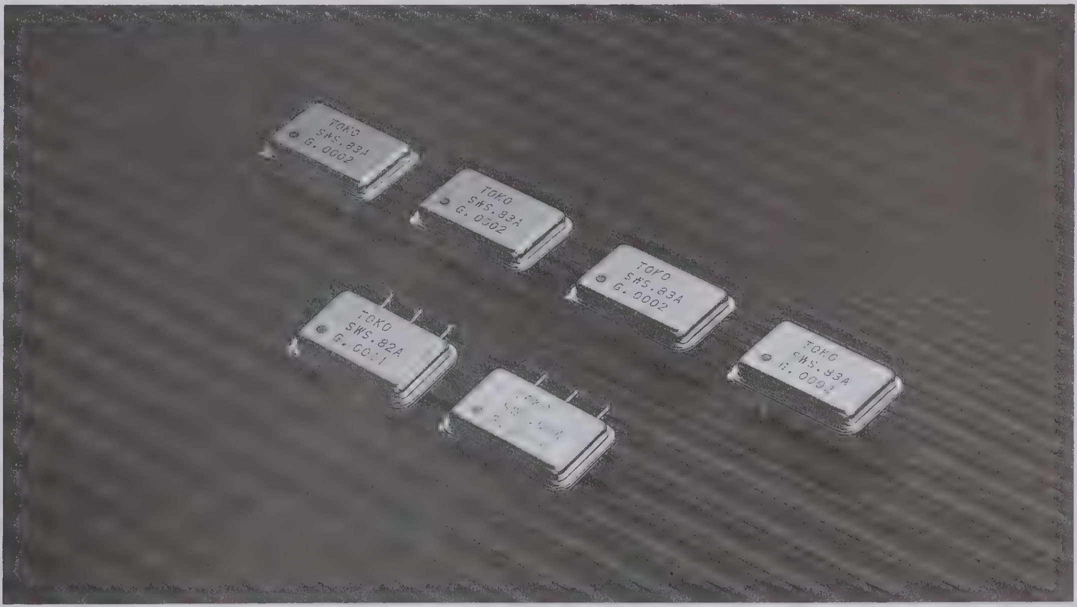
A new TOKO developed SAW filter architecture, utilizing laterally-coupled double-mode resonators, makes it possible to achieve Q's of up to 15,000, 150% greater than conventional SAW filter design technologies.

Filter passband response is extremely flat with minimal ripple. Typical insertion losses are less than 3 dB, with a typical group delay of less than 2 microseconds.

Utilizing TOKO's own synthetically grown and ST-cut quartz crystal substrates, TOKO SAW filter stability is outstanding under extreme temperature conditions. Hermetically sealed against moisture, the SWS series also meets military specifications for acceleration, shock, and vibration.

Since SAW filter characteristics and center frequency are established by the same precision photo-lithography used to manufacture semiconductors. Semiconductor fabrication techniques also insure precise repeatability, unit to unit.

TOKO's SWS series SAW filters are ideal for use in the new higher frequency 1st IF stages required by future generations of mobile cellular communications systems.

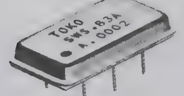


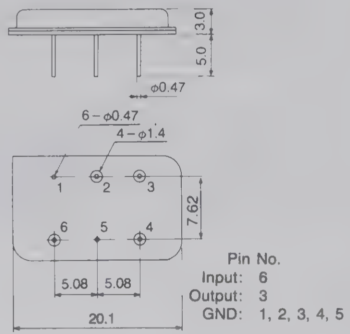
TOKO
TOKO AMERICA, INC.

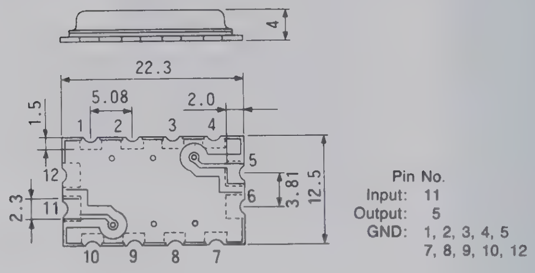
*1250 Feehanville Drive • Mt. Prospect, Illinois 60056 • TEL 708/297-0070 • FAX 708/699-7864*

**SWS:** The 1st IF SAW Filter for Mobile Telephones

***Frequency Range:*** 82～95MHz
***Temperature:*** −30 to +60°C







A SAW double-mode resonator filter for use as the 1st IF filter in a mobile telephone.

- The newly designed Toko 80MHz SAW filter is a remarkable achievement developed specifically for the 1st IF filter circuit as used in cellular telephones.
- Advanced ST-cut cultured crystal technology has been employed as the substrate. This new development was undertaken to produce a small size, high-Q SAW resonator, using the coupled lateral double-mode method.
- The Q value achieved on the new resonator architecture is 1.5 times higher than conventional designs, thus producing exceptional improvements in efficiency and performance.
- Coupling these resonators electrically has rendered a four pole, compact, low profile, low loss filter requiring no additional tuning.
- Toko has performed extensive life tests that assure sound performance and reliability of the hermetical seal.

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please contact our sales office or representative office.

### Analog cellular

| Part No. | Center Freq. (MHz) | Bandwidth at 3dB (kHz) | Attenuation at ±60kHz (dB) | Ripple (dB) | Group Delay Dev. (μsec) | Insertion Loss (dB) | *I/O Impedance (Ω) | Remarks |
|---|---|---|---|---|---|---|---|---|
| SWS.82A | 82.2000 | ±15 min. | 25 min. | 1.5 min. | 10 | 4 min. | 50 | |
| SWS.82AA | 82.2000 | ±15 min. | 25 min. | 1.5 min. | 10 | 4 min. | 50 | |
| SWS.83A | 83.1600 | ±15 min. | 25 min. | 1.5 min. | 10 | 4 min. | 50 | |
| SWS.83AS | 83.1600 | ±15 min. | 25 min. | 1.5 min. | 10 | 4 min. | 50 | SMD |
| SWS.86A | 86.5125 | ±12.5min. | (25) min. | 1.5 min. | (10) | 4 min. | 50 | |
| SWS.87A | 87.0000 | ±15 min. | 25 min. | 1.5 min. | 10 | 4 min. | 50 | |
| SWS.89A | 89.1500 | ± 8.5min. | (25) min. | 1.5 min. | ((10)) | 4.5 min. | 50 | |
| SWS.90A | 90.0000 | ±12.5min. | (20) min. | 1.5 min. | (10) | 4 min. | 50 | |
| SWS.90DS | 90.0750 | ±15 min. | (25) min. | 1.5 min. | 10 | 5 min. | 50 | SMD |
| SWS.91A | 91.9875 | ±12 min. | (15) min. | 1.5 min. | (10) | 4 min. | 50 | |
| SWS.92A | 92.0250 | ±15 min. | (15) min. | 1.5 min. | 10 | 4 min. | 50 | |
| SWS.94A | 94.3500 | ±17 min. | 20 min. | 1.5 min. | 10 | 5 min. | 50 | |

( ): ±50kHz

( ): 50±8kHz
(( )): 50±6kHz

### Digital cellular

| Part No. | Center Freq. (MHz) | Bandwidth at 3dB (kHz) | Attenuation at ±60kHz (dB) | Ripple (dB) | Group Delay Dev. (μsec) | Insertion Loss (dB) | *I/O Impedance (Ω) | Remarks |
|---|---|---|---|---|---|---|---|---|
| SWS.82B | 82.2000 | ±15 min. | 18 min. | 1 min. | 6 | 3 min. | 50 | |
| SWS.82BS | 82.2000 | ±15 min. | 18 min. | 1 min. | 6 | 3 min. | 50 | SMD |
| SWS.83B | 83.1600 | ±15 min. | 18 min. | 1 min. | 6 | 4 min. | 50 | |
| SWS.86B | 86.0100 | ±15 min. | 18 min. | 1 min. | 8 | 3 min. | 50 | |
| SWS.90AA | 90.0000 | ±16 min. | 15 min. | 1.5min. | (10) | 4 min. | 50 | |
| SWS.90E | 90.0000 | ±15 min. | (10) min. | 1.5min. | (6) | 5 min. | 50 | |

( ): ±50kHz

( ): 50±10kHz

with matching circuit

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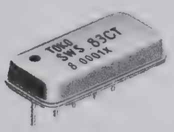

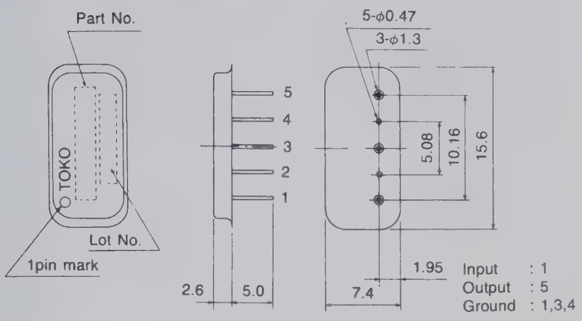

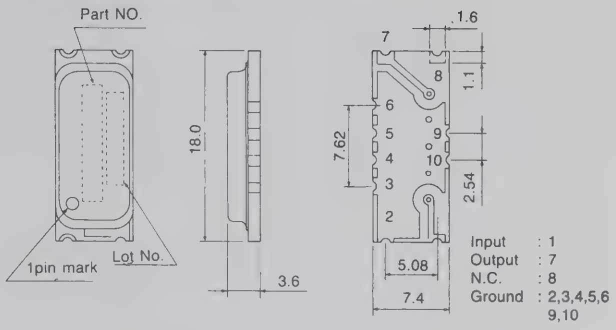

A SAW double-mode resonator filter for use as the 1st IF filter in a mobile telephone.

- Meets with minimum-space design.
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### *TYPE SWS/T*

### Analog cellular

| Part No. | Center Freq. (MHz) | Bandwidth at 3dB (kHz) | Attenuation at ±60kHz (dB) | Ripple (dB) | Group Delay Dev. (μsec) | Insertion Loss (dB) | *I/O Impedance (Ω) | Remarks |
|---|---|---|---|---|---|---|---|---|
| SWS.83CT | 83.1600 | ±15 min. | 25 min. | 1.5 min. | 10 | 5 min. | 50 | |
| SWS.83CTS | 83.1600 | ±15 min. | 25 min. | 1.5 min. | 10 | 5 min. | 50 | SMD |
| SWS.90FT | 90.0000 | ±15 min. | 20 min. | 1.5 min. | 10 | 5 min. | 50 | |
| SWS.91BT | 91.9875 | ±12 min. | (15) min. | 1.5 min. | (10) | 5 min. | 50 | |

( ): ±50kHz ( ): 50±8kHz

### Digital cellular

| Part No. | Center Freq. (MHz) | Bandwidth at 3dB (kHz) | Attenuation at ±60kHz (dB) | Ripple (dB) | Group Delay Dev. (μsec) | Insertion Loss (dB) | *I/O Impedance (Ω) | Remarks |
|---|---|---|---|---|---|---|---|---|
| SWS.90ET | 90.0000 | ±15 min. | 10 min. | 1.5 min. | 6 | 5 min. | 50 | |
| SWS.90ETS | 90.0000 | ±15 min. | 10 min. | 1.5 min. | 6 | 5 min. | 50 | SMD |

( ): ±50kHz ( ): 50±8kHz

*with matching circuit

# CERAMIC BASED RESONATORS AND FILTERS

The TOKO Ceramic Engineering Group has been pioneering advances in ceramic manufacturing for over 25 years. TOKO's commitment to product development and innovation is exhibited in the following pages describing specific ceramic based resonators and filters.

TOKO Ceramic Resonators and Filters feature TOKO's exclusive Micro Soldering Technique which solders the resonant element connections to the pin leads. Other manufacturers rely on compressed connections. Because the components are silver plated, oxidation will take place if not soldered. This oxidation will cause the characteristics to change. TOKO's exclusive method assures stability of characteristics such as resonant resistance throughout the part's life.

TOKO Ceramic Resonators and Filters feature:

- Ultra-miniature size for high density packaging.
- Superior waveform balance in selectivity.
- High reliability and linearity due to low temperature coefficient.
- Low spurious response to external conditions.
- Alignment-free.
- Unaffected by magnetic interference.
- Package designed for automatic assembly.

Ceramic Filters are frequently interdependent devices in a circuit. As with other components, how well they are matched determines the ultimate performance of the circuit. Ceramic filters, either singularly or in cascade, provide the selectivity desired and IFT's are used as a matching transformer to balance the circuit.

For example, in AM filters, a certain level of unwanted resonance is produced that distorts the basic vibration characteristics (spurious response). TOKO can furnish IFT's, or low pass LC filters, specifically designed for the ceramic part to cancel the unwanted effect.

More typically, there is the issue of impedance matching between components and/or circuits which is always a prime consideration. TOKO can furnish IFT's to compensate for the DC loss. This capability makes TOKO one of the world's premier integrated manufacturer of RF components, offering you a high degree of assurance that you can match components that are literally made for each other from one source.

Ceramic Resonators offer much higher Q and lower temperature coefficient than LC oscillators, for greater stability. There are minimal changes in oscillation frequency due to voltage fluctuations. Compared with quartz crystal oscillators, the TOKO ceramic resonator offers much smaller size, even in low frequency models, at much lower cost.

Applications include clock oscillator in mini and micro computers, sign wave and square wave oscillators, reference signal generators, VCO's which reproduce subcarrier's synchronous pilot signals and various applications for use with servo motor controls. TOKO ceramic resonators are available from 220Hz to 500kHz.

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# CERAMIC RESONATORS AND FILTERS

Various packaging schemes are available. In addition to bulk, bandoliered reels and ammo packs are offered for high volume insertion equipment. Consult TOKO AMERICA for specifics.

## *Cerazonator Piezoelectric Ceramic Resonators*

TOKO Cerazonator series ceramic resonators utilize the piezoelectric principle converting a mechanical force (stress) into an electrical signal or converting an electrical signal into a mechanical force.

The ceramic resonator is a thin section of piezoelectric ceramic material, such as quartz, whose sides are metalized into a corresponding pair of electrodes and upon the application of current produce a lengthwise vibration.

These bi-terminal vibrating elements have minimum and maximum impedance characteristics as shown in Fig. 1. Resonate frequency (Fr) and anti-resonate frequency (Fa) are determined by the elastic coefficient of the ceramic, its dimension and oscillation mode. Their resultant is z. The impedance between Fr and Fa can be expressed as the Effective Inductance (Leff) and the Effective Loss (reff); z = Reff + jw Leff.

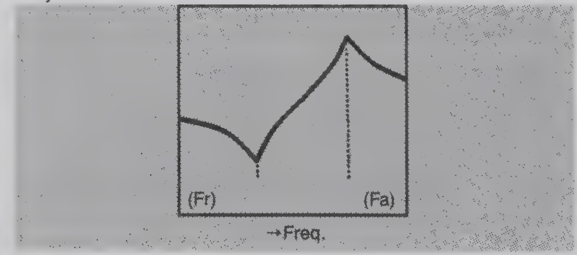


*Fig 1. Impedance Characteristics of the Cerazonator Ceramic Resonator.*

The Cerazonator ceramic resonator becomes inductive in the frequency zone between Fr which provides the minimum impedance, and Fa which provides the maximum impedance. In other frequency zones, it becomes capacitive. Table 1 shows the equivalent coefficient for Types CRL and CRK.

| Characteristic | CRL220 | CRK455 |
|---|---|---|
| Lo (mH) | 107 | 5.3 |
| Cd (pF) | 98 | 46 |
| Co (pF) | 5.0 | 2.3 |
| Ro (ohms) | 200 | 200 |

*TABLE 1. Equivalent Coefficient of Cerazonator Ceramic Resonators.*

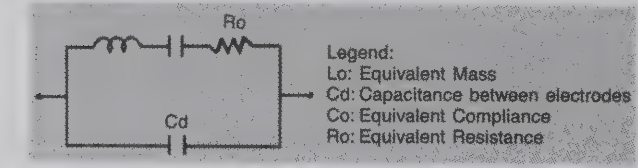

Ro
Cd
Legend:
Lo: Equivalent Mass
Cd: Capacitance between electrodes
Co: Equivalent Compliance
Ro: Equivalent Resistance

*Fig 2. Electrical Equivalent Circuit*

## *How to apply Cerazonators:*

The Cerazonator ceramic resonator is applied to an oscillating circuit utilizing the Effective Inductance characteristic. So, to replace the widely used Colpitts type (Fig 3) oscillating circuit, substitute the inductance L of the Colpitts with the Leff of the Cerazonator. The steep frequency characteristics of the Cerazonator enables the resonator to provide more stable and precise oscillation compared with the LC circuit.

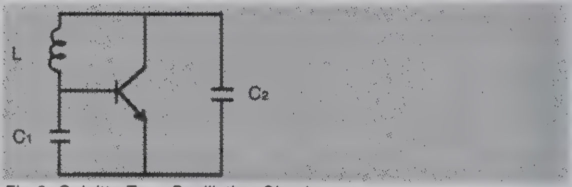


*Fig 3. Colpitts Type Oscillating Circuit*

Cerazonator resonators can also be used in oscillating circuits with MOS type inverters or TTL logic. Figure 4 shows a standard test circuit designed with a CMOS inverter.

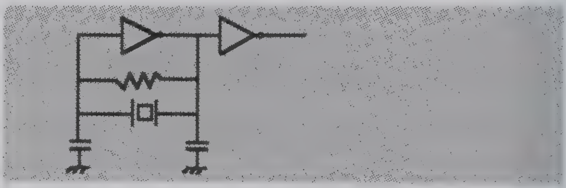


*Fig 4. Oscillating circuit designed with CMOS inverter utilizing a Cerazonator.*

## *Preventing Spurious Oscillation*

Since Cerazonators are a type of mechanical vibrating device, spurious vibrations can exist in addition to the basic vibration. Spurious oscillation may occur depending on the performance of the amplifier and the values of the external capacitance C1 and C2.

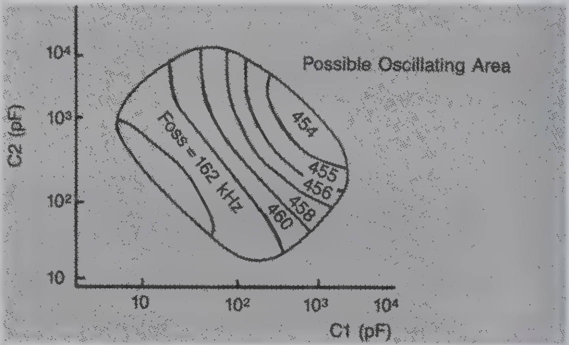


*Fig 5. Possible oscillating area and frequency measured with CRK455 test circuit.*

Spurious oscillation can be preventing by selecting proper C1 and C2 capacitors. Figure 5 shows the possible oscillating area of CRK455 using C1 and C2 as parameters. Desired oscillation can be obtained in a considerably wide range of C1 and C2. However, selecting the proper C1 and C2 is important to avoid spurious oscillation and to satisfy the output specification. Selecting the proper value of C1 and C2 is dependent upon the supply voltage and the IC used.

## *Prototyping Kits*

***Prototyping and experimenting kits are available for various types. Contact the nearest TOKO AMERICA sales office for details and ordering information.***

**TOKO**

# AM Ceramic Filters

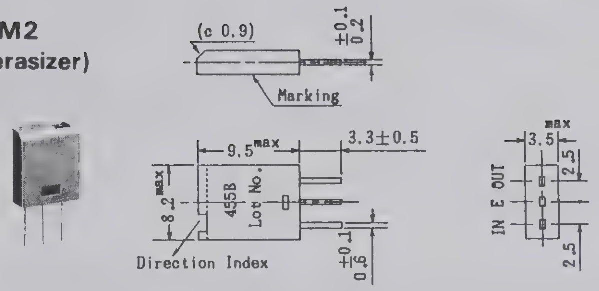
## Cerasizer and Ceratune

TYPE
CFB
CFM2
CFMS
CFMF
CFM8

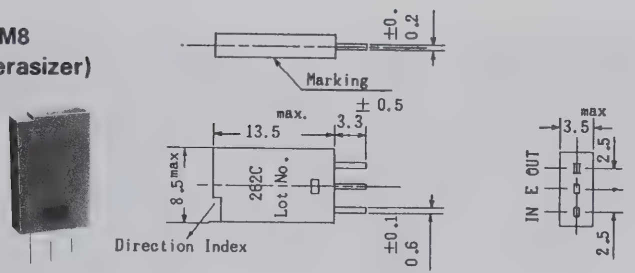
**CFB:** **1-Element, Ceratune**
**CFM2:** **2-Element, Cerasizer, 455kHz Center Frequency**
**CFM8:** **2-Element, Cerasizer, 262kHz Center Frequency**
**CFMS:** **2-Element Subminiature Cerasizer**
**CFMF:** **4-Element, Cerasizer**

***Frequency Range:*** 450kHz-470kHz, 220kHz-380kHz
***Temperature Coefficient:*** 0 ± 80ppm/°C
***Temperature Range:*** –10 to +80°C

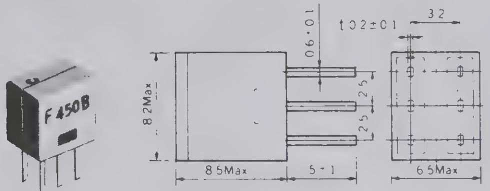
**CFM2**
**(Cerasizer)**

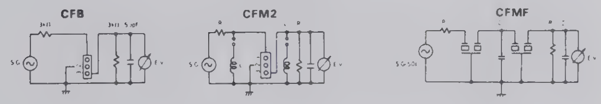


**CFM8**
**(Cerasizer)**



**CFMF**
**(Cerasizer)**





## *Quality Features:*

- Ideal for small and thin model radios, micro cassette and broadcast radios, high grade AM stereo and CB transceivers.
- CFM2 and CFMS have dual resonating elements. CFMF has 4 resonating elements for excellent selectivity. All are capacitance coupled for lower distortion.
- Ideal for electronic tuners where superior resistance to temperature fluctuation and high performance are required.
- Outstanding selectivity characteristics are achieved without alignment. This reduces labor and makes the device suitable for automated assembly and test.
- The low temperature coefficient (which is practically linear) renders high reliability to accommodate a wide range of applications.
- High selectivity and good spurious response suppression.
- Unlike other manufacturers who use the ceramic package to pressure the components together, (which can cause oxidation to form between the element and terminal), TOKO solders the resonating element and the silver terminal pin leads together, using the TOKO proprietary Micro Soldering technique. Characteristics, such as resonant resistance and the overall performance, remain constant throughout the life of the device.
- Type CFB features low profile/space saving package and wedge shaped self-supporting terminals to assure a good grasp to the PCB before soldering. Notched standoffs on leads assure straight mounting and prevent component damage during assembly to the PCB.

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## STANDARD DEVICES SELECTION GUIDE

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- Input level (db) of S.G. to have 0.6 MV output at center frequency.
- Regarding center frequencies:
  Example: CFMS-455Z—The 455 shown in this part number represents a center frequency of 455 KHz. When ordering these parts, if you are interested in another available frequency, please insert the applicable frequency in place of 455.

### *TYPE CFA*

| TOKO Part Number | Center Frequency (kHz) | Bandwidth −6dB (kHz) min. | Selectivity Fo ± 9kHz (dB) min. | Insertion Loss (dB max) | Attenuation Within ± 100kHz (dB min.) | I/O Impedance (Ohms) |
|---|---|---|---|---|---|---|
| ACFA-450 | 450 ± 1.1 | 13 ± 3 | 6 | 5 | 10 | 3000:3000 |
| BCFA-450 | 450 ± 2.1 | 13 ± 3 | 6 | 5 | 10 | 3000:3000 |

Also available in 455, 460 and 468 KHZ

### *TYPE CFMR*

| TOKO Part Number | Center Frequency (kHz) | Bandwidth −6dB (kHz) min. | Selectivity Fo ± 9kHz (dB) min. | Insertion Loss (dB max) | Attenuation Within ± 100kHz (dB min) | I/O Impedance (Ohms) |
|---|---|---|---|---|---|---|
| CFMR-455Z | 455 ± 2 | 3 | 24 | 7 | 20 | 1000:1500 |
| CFMR-455A | 455 ± 2 | 4 | 18 | 6 | 30 | 1000:1500 |
| CFMR-455B | 455 ± 2 | 6 | 16 | 6 | 30 | 1500:2000 |
| CFMR-455C | 455 ± 2 | 8 | 12 | 6 | 30 | 2000:2000 |

Also available in 450, 459, 460 and 468 KHz

### *TYPE CFM2*

| TOKO Part Number | Center Frequency (kHz) | Bandwidth −6dB (kHz) min. | Selectivity Fo ± −9kHz (dB) min. | Insertion Loss (dB max) | Attenuation Within ± 100kHz (dB min) | I/O Impedance (Ohms) |
|---|---|---|---|---|---|---|
| HCFM2-455Z | 455 ± 2 | 4 ± 1 | 24 | 7 | 20 | 1000:1500 |
| HCFM2-455A | 455 ± 2 | 4 | 18 | 6 | 30 | 1000:1500 |
| HCFM2-455B | 455 ± 2 | 6 | 16 | 6 | 30 | 1500:2000 |
| HCFM2-455C | 455 ± 2 | 8 | 12 | 6 | 30 | 2000:2000 |
| HCFM2-455D | 455 ± 2 | 10 | 9 | 6 | 30 | 2000:2000 |
| HCFM2-455E | 455 ± 2 | 12 | 6 | 6 | 30 | 2500:2500 |

### *TYPE CFM8*

| TOKO Part Number | Center Frequency (kHz) | Bandwidth −6dB (kHz) min. | Selectivity Fo ± −9kHz (dB) min. | Insertion Loss (dB max) | Attenuation Within ± 100kHz (dB min) | I/O Impedance (Ohms) |
|---|---|---|---|---|---|---|
| CFM8-262A | 262 | 4 | 18 | 6 | 30 | 2k:2k |
| CFM8-262B | 262 | 6 | 16 | 6 | 30 | 3k:3k |
| CFM8-262C | 262 | 8 | 12 | 6 | 30 | 5.0K:5.0K |

### *TYPE CFMF*

| TOKO Part Number | Center Frequency (kHz) | Bandwidth −6dB (kHz) min. | Selectivity Fo ± −9kHz (dB) min. | Insertion Loss (dB max) | Attenuation Within ± 100kHz (dB min) | I/O Impedance (Ohms) | Coupling Capacitation (pF) |
|---|---|---|---|---|---|---|---|
| CFMF-450Z | 450 ± 2 | 4 ± 1 | 45 | 6 | 50 | 1000:1500 | 330 |
| CFMF-450B | 450 ± 2 | 5 | 40 | 6 | 50 | 2000:2000 | 180 |
| CFMF-450C | 450 ± 2 | 7 | 30 | 6 | 50 | 3000:3000 | 120 |
| CFMF-450D | 450 ± 2 | 9 | 25 | 6 | 50 | 3000:3000 | 56 |

Also available in 455, 460 and 468 KHz

## AM Ceramic Filters with Matching Coils

The following are examples of how TOKO can combine your ceramic filter and matched IFT in one package.

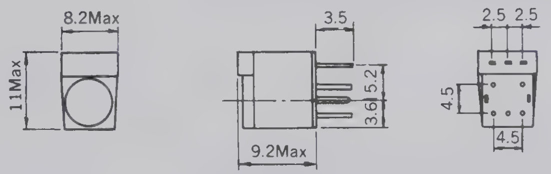
For large requirements TOKO can assemble single through quadruple tuned devices to speed design and maximize use of board space.

**Examples of characteristics**
**ACFMP-004**

| | |
|---|---|
| Center Frequency | 450±1.0kHz |
| Bandwidth, at 6dB | 6kHz Min |
| Selectivity, ±9kHz detuning | 25dB Min |
| Input Level, at 0.6mV output, fixed | 94.5±3dB |

**CFMP** **(Triple-tuned)**

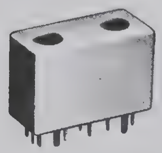
**Dimensions** (Unit : mm)



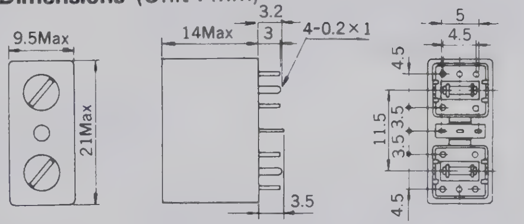
**Examples of characteristics**
**CFMQ-001**

| | |
|---|---|
| Center Frequency | 455±1.5kHz |
| Bandwidth, at 6dB | 5.5kHz Min |
| Selectivity, ±9kHz detuning | 33dB Min |
| Input Level, at 0.6mV output, fixed | 82±3dB |

**CFMQ** **(Quadruple-tuned))**



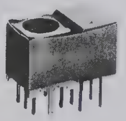
**Dimensions** (Unit : mm)



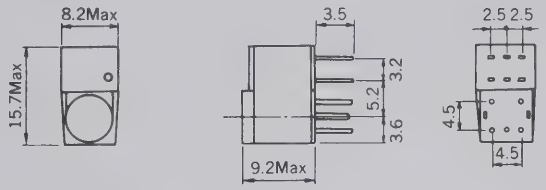
**Examples of characteristics**
**CFMW-001**

| | |
|---|---|
| Center Frequency | 450±1.0kHz |
| Bandwidth, at 6dB | 10kHz Min |
| Selectivity, ±9kHz detuning | 22dB Min |
| Input Level, at 0.6mV output, fixed | 93±3dB |

**CFMW** **(Quintuple-tuned)**



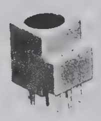
**Dimensions** (Unit : mm)



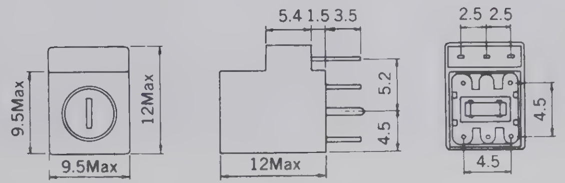
**Examples of characteristics**
**BCFBZ-450A**

| | |
|---|---|
| Center Frequency | 450±2.5kHz |
| Bandwidth, at 6dB | 5kHz Min |
| Selectivity, ±9kHz detuning | 18dB Min |
| Input Level, at 0.6mV output, fixed | 75.5±3dB |

**CFBZ** **(Double-tuned)**



**Dimensions** (Unit : mm)



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## AM Ceramic Filters with Matching Coils

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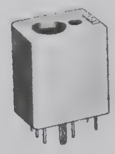
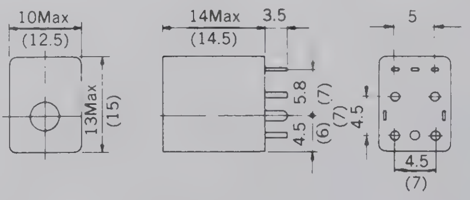
### CFMA/CFME (Triple-tuned)

**Examples of characteristics**
**CFMA-003**

| | |
|---|---|
| Center Frequency | 455 ± 2.5kHz |
| Bandwidth, at 6dB | 5kHz Min |
| Selectivity, ± 9kHz detuning | 25dB Min |
| Input Level, at 0.6mV output, fixed | 78.5 ± 3dB |



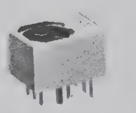
**Dimensions** (Unit : mm)



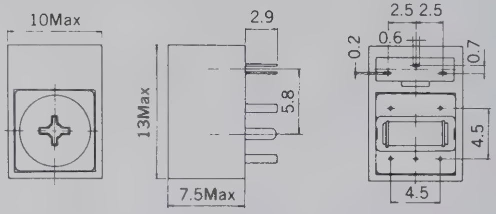
### CFML (Triple-tuned)

**Examples of characteristics**
**CFML-001**

| | |
|---|---|
| Center Frequency | 450 ± 1.0kHz |
| Bandwidth, at 6dB | 5.5kHz Min |
| Selectivity, ± 9kHz detuning | 25dB Min |
| Input Level, at 0.6mV output, fixed | 94.5 ± 3dB |



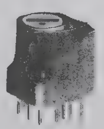
**Dimensions** (Unit : mm)



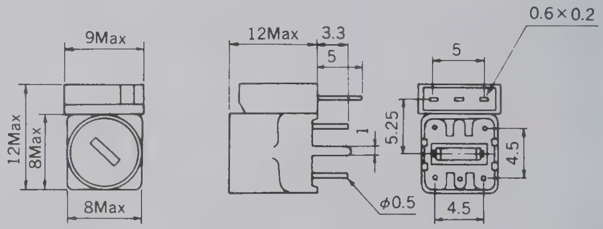
### CFMT (Triple-tuned)

**Examples of characteristics**
**CFMT-012**

| | |
|---|---|
| Center Frequency | 455 ± 2.5kHz |
| Bandwidth, at 6dB | 5kHz Min |
| Selectivity, ± 9kHz detuning | 25dB Min |
| Input Level, at 0.6mV output, fixed | 78.5 ± 3dB |



**Dimensions** (Unit : mm)



## FM Ceramic Filters

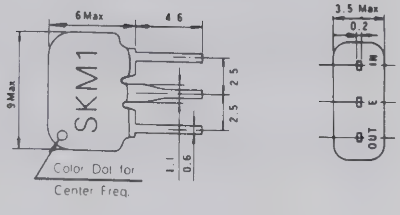
**CFSK:** **Low profile for compact designs.**
**Low Loss Type.**

***Frequency Range:*** 10.7MHz
***Temperature Coefficient:*** 0 ± 50ppm/°C
***Temperature Range:*** −10 to +80°C

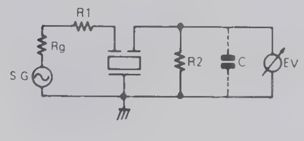
**CFSK107M1**

**CFSK107M2**

**CFSK107M3**



**Test Circuit**



**Test Condition**

$R_1 + Rg = R_2 = 330\Omega$
$C \geqq 15pF$ (include E.V.Cap.)

## *Quality Features:*

- Ceramic filters offer ultra-miniature size for high density.
- Dual resonating elements make up a 2-element wafer and are capacitance coupled for lower distortion.
- Ideal for electronic tuners where superior resistance to temperature fluctuations and high performance are required.
- The low temperature coefficient (which is practically linear) provides high reliability to accommodate a wide range of applications.
- High selectivity and good spurious response suppression.
- The final outer coating of resin provides an additional moisture barrier for long, trouble-free service in hostile environments.
- The CFSK features wedge shaped self-supporting terminals to assure a good grasp to the PWB before soldering.
- Notched standoffs on leads assure straight mounting and prevent component damage during assembly to the PWB.

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please contact our sales office or representative office.

(1) X of the TOKO Part Number shows Low Loss type
G of the TOKO Part Number shows Group Delay Time flat type.

### *TYPE CFSK*

| TOKO Part Number | Center Frequency(2) (MHz) | Bandwidth −3dB (kHz). max. | Bandwidth −20dB (kHz). max. | Insertion Loss (dB) max. | Spurious Response (dB) min. | I/O Impedance (ohms) |
|---|---|---|---|---|---|---|
| SK107M0-AE-00 | 10.7 | 330 ± 50 | 680 | 6 | 30 | 330 |
| SK107M0-AE-00X(1) | 10.7 | 330 ± 50 | 680 | 4 | 30 | 330 |
| SK107M1-AE-10 | 10.7 | 280 ± 50 | 650 | 6 | 30 | 330 |
| SK107M1-AE-10X(1) | 10.7 | 280 ± 50 | 650 | 4 | 30 | 330 |
| SK107M2-AE-00 | 10.7 | 280 ± 50 | 600 | 6 | 35 | 330 |
| SK107M2-AE-00X(1) | 10.7 | 230 ± 50 | 600 | 4.5 | 35 | 330 |
| SK107M3-AE-20 | 10.7 | 180 ± 40 | 520 | 7 | 40 | 330 |
| SK107M3-AE-00X(1) | 10.7 | 180 ± 40 | 520 | 3.5 | 40 | 330 |
| SK107M4-AE-00 | 10.7 | 150 ± 40 | 400 | 10.0 | 40 | 330 |
| SK107M4-AE-00X(1) | 10.7 | 150 ± 40 | 400 | 7.0 | 40 | 330 |
| SK107M5-AE-00 | 10.7 | 110 ± 30 | 350 | 10.0 | 30 | 330 |
| SK107M5-AE-00X(1) | 10.7 | 110 ± 30 | 350 | 8.0 | 30 | 330 |

## *CENTER FREQUENCY & COLOR CODE*

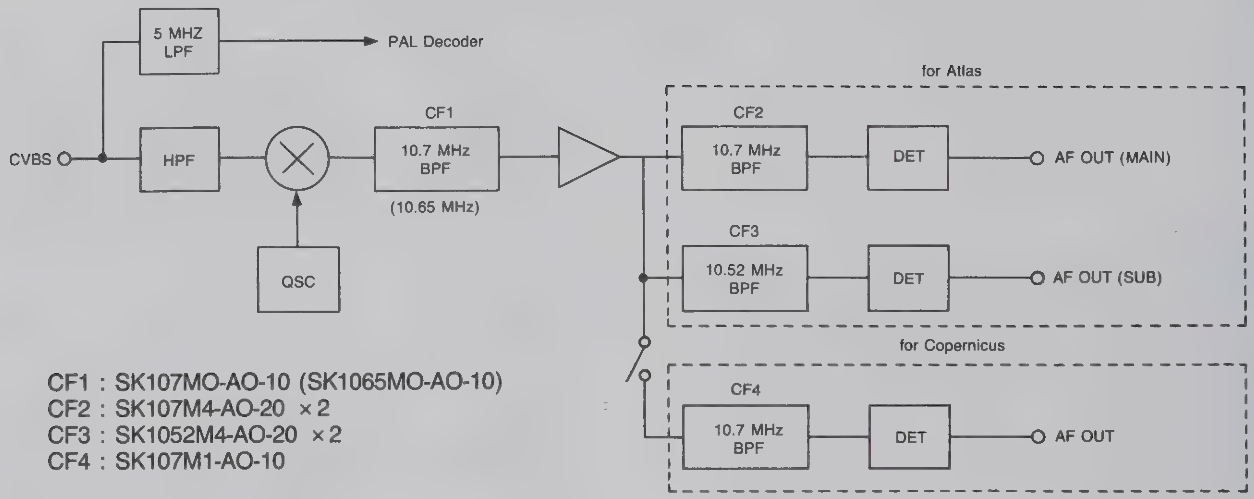
| Rank | Center Frequency | Color Code |
|---|---|---|
| A | 10.70MHz ± 30kHz | None |
| B | 10.67MHz ± 30kHz | Blue |
| C | 10.73MHz ± 30kHz | Orange |
| D | 10.64MHz ± 30kHz | Black |
| E | 10.76MHz ± 30kHz | White |

(2) We suggest sampling all five ranks so you can adjust the circuit accordingly. Production shipments are segregated and marked by rank so you can plan your production accordingly.

*continued from previous page*

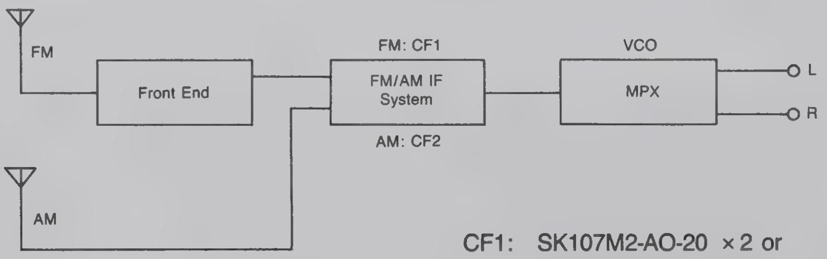
## APPLICATIONS

### Sound IF for use in DBS Tuners



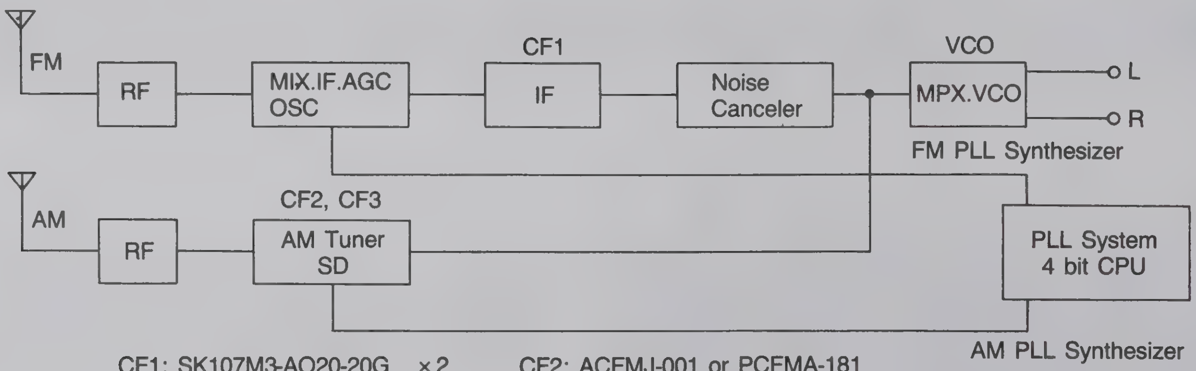
CF1 : SK107MO-AO-10 (SK1065MO-AO-10)
CF2 : SK107M4-AO-20 × 2
CF3 : SK1052M4-AO-20 × 2
CF4 : SK107M1-AO-10

### AM·FM IF for use in Stereo Tuners



CF1: SK107M2-AO-20 × 2 or
SK07M1-AO-10 × 2
CF2: BCFAZ-015 or (for Stereo tuner)
CFMA-003 (for High Selectivity use)
VCO: CMU2-456A # # (for VCO in FM Multiplex)

### AM·FM IF for use in Car Radios



CF1: SK107M3-AO20-20G × 2
VCO: CMU2-456A # #

CF2: ACFMJ-001 or PCFMA-181
CF3: CMU1-450A01 (SD)

## Cerasonator (Oscillating Elements)
## CRL
## CRK
## CRA

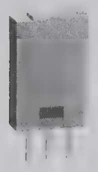
***Frequency Range CRL:*** 200-380kHz
***CRK:*** 380-680kHz
***CRA:*** 455-500kHz
***Temperature Characteristic Fo Drift:*** ±0.03% max.
***Temperafure Range:*** −10 to +80°C

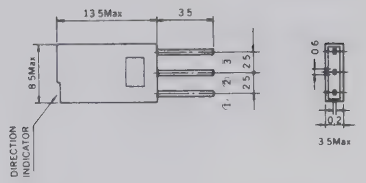
### CRK Series

### *Quality Features:*

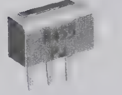
- Ultra-miniature in size, they are small, light and low profile for portable equipment requiring compact design.
- Low cost, high precision, and reliability make these resonators ideal as clock generators in CPU's found in micro-computers and printers, infrared and ultra-sonic remote control units and test and measurement equipment.
- TOKO solders the resonating element and the silver terminal pin leads together,

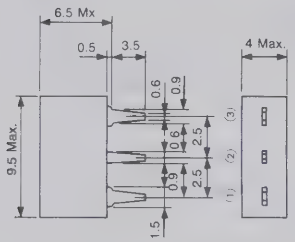
### CRL Series





### CRA





- Applicable for use with most popular IC's. See Application Notes.
- Type CRL features terminal pins 1 and 3 interconnected to offer added flexibility and mounting stability in your design.

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please contact our sales office or representative office.

(1) Frequency of oscillation.
(2) External capacitance depends upon the IC used.

### *CRL Series*

| TOKO Part Number | Fosc(1) (kHz) | Fosc Initial Error | Resonating Resistance (ohms, max) | Resonating Frequency (kHz) | External Capacitor(2) C1 (pF) | C2 |
|---|---|---|---|---|---|---|
| CRL220 | 220 | ±3% | 400 | 220-380 | 300 | 300 |
| CRL262 | 262 | ±3% | 400 | 220-380 | 300 | 300 |
| ***CRK Series*** | | | | | | |
| CRK400 | 400 | ±1% | 400 | 400-680 | 560 | 200 |
| CRK455 | 455 | ±1% | 400 | 400-680 | 560 | 200 |
| CRK480 | 480 | ±1% | 400 | 400-680 | 560 | 200 |
| CRK500 | 500 | ±1% | 400 | 400-680 | 560 | 200 |
| ***CRA Series*** | | | | | | |
| CRA455 | 455 | ±1% | 3000 | 450-500 | — | — |

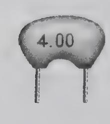
### *Mechanical and Environmental Test Conditions*

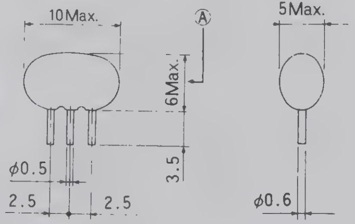
| Parameter | Test Procedure | Permissible Change |
|---|---|---|
| High Temperature Storage[1] | Expose to +85ºC for 1000 hours | |
| Low Temperature Storage | Expose to −40ºC for 1000 hours | |
| Thermal Shock[1] | −40 to +85ºC, 60 min. each, 4 cycles | Oscillating Frequency (Fosc) ±0.3% in standard circuit |
| Humidity[1] | Expose to +40ºC, 90% RH for 96 hours. | |
| Vibration | 55-500Hz, 1.5mm amplitdue, XYZ 10 G's, 1 cycle, 15 min., 8 cycles | |
| Shock | 1000 G's, XYZ, once each | |
| Solder Heat[1] | Dip in molten solder at 270ºC ±5ºC for 10 ±1 sec. Dip 1mm from case bottom. | |
| Terminal Tension | Pull with 1 kgwt strength for 10 sec. | No damage |
| Insulation Res. | Apply 100VDC for 1 minute. | No dielectric breakdown |

[1] Measure after being exposed at room temperature 1 hour

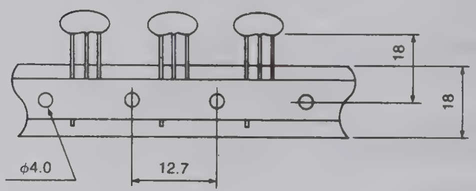
## Cerasonator (Oscillating Elements)
## CRHF
## CRHT

***Frequency Range CRHF:*** 2.50-6.00MHz
***CRHT:*** 2.50-6.00MHz
***Temperature Coefficient Fo Drift:*** ±0.3%max.
***Temperature Range:*** −10 to +85°C





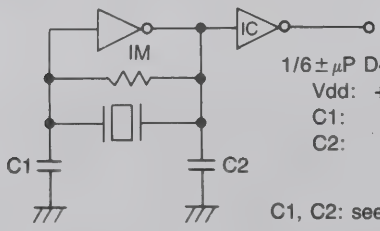
**Radial Taping Package**



## *Quality Features:*

- Type CRHF has round leads for easier use with auto assembly equipment.
- Ultra-miniature in size, they are small, light and low profile for portable equipment requiring compact design.
- Low cost, high precision, and reliablilty make these resonators ideal as clock generators in CPU's found in micro computers and printers, major appliances, infrared and ultra-sonic remote control units and measurement equipment.
- Unlike other manufacturers who use the ceramic package to press the components together, which can cause oxidation to form between the element and terminal, TOKO solders the resonating element and the silver terminal pin leads together, using the TOKO proprietary Micro Soldering technique. Characteristics, such as resonant resistance and the overall performance, remain constant throughout the life of the device.
- Applicable for use with most popular IC's. See Application Notes.
- No alignment is required which reduces labor and makes the device suitable for automated assembly and testing.

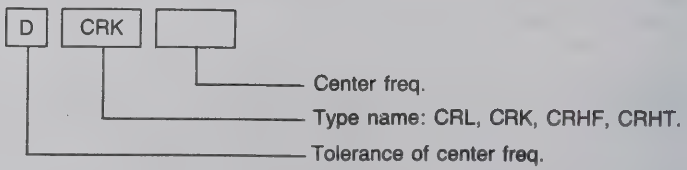
**Test Circuit**



1/6±μP D4069UBC
Vdd: +5V
C1: pF
C2: pF

C1, C2: see the selection quide.

**Naming of Toko's Cerasonator**



(%)

| A | B | C | D | E | F | G | H | | J | K |
|---|---|---|---|---|---|---|---|---|---|---|
| ±0.2 | ±0.3 | ±0.4 | ±0.5 | ±0.6 | ±0.7 | ±0.8 | ±0.9 | ±1.0 | ±2.0 | ±3.0 |

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices to meet your requirements. If you do not find the device for your application, please contact our sales office or representative office.

(1) Frequency of oscillation. (2) External capacitance depends upon the IC used.

### *TYPE CRHF*

| TOKO Part Number | Fosc[1] (MHz) | Fosc Initial Tolerance | Resonating Resistance (ohms, max) | External Capacitor[2] (pF) C1 | External Capacitor[2] (pF) C2 |
|---|---|---|---|---|---|
| CRHF2.50 | 2.50 | 1% | 30 | 30 | 30 |
| CRHF3.58 | 3.58 | 1% | 30 | 30 | 30 |
| CRHF4.00 | 4.00 | 1% | 30 | 30 | 30 |
| CRHF4.03 | 4.03 | 1% | 30 | 30 | 30 |
| CRHF6.00 | 6.00 | 1% | 30 | 30 | 30 |

### *TYPE CRHT*

| TOKO Part Number | Fosc[1] (MHz) | Fosc Initial Tolerance | Resonating Resistance (ohms, max) | External Capacitor[2] (pF) C1 | External Capacitor[2] (pF) C2 |
|---|---|---|---|---|---|
| CRHT2.50 | 2.50 | 1% | 30 | | |
| CRHT3.58 | 3.58 | 1% | 30 | | |
| CRHT4.00 | 4.00 | 1% | 30 | | |
| CRHT6.00 | 6.00 | 1% | 30 | | |

# HELICAL FILTERS

TOKO engineering experience and innovation has created the helical filters featured in this section. Smaller size, wider frequency ranges, closer tolerances and other superior characteristics make TOKO a leader in Helical Filters. TOKO will also design and manufacture custom helical filters with specific characteristics to meet your requirements.

In the VHF and UHF range, high selectivity filters cannot be designed using conventional LC techniques. The practical limitations of corresponding smaller inductance and capacitance values precludes this. Piezo electric crystal resonators are usually not flexible enough to provide adequate bandwidths and are impractical at the higher frequencies.

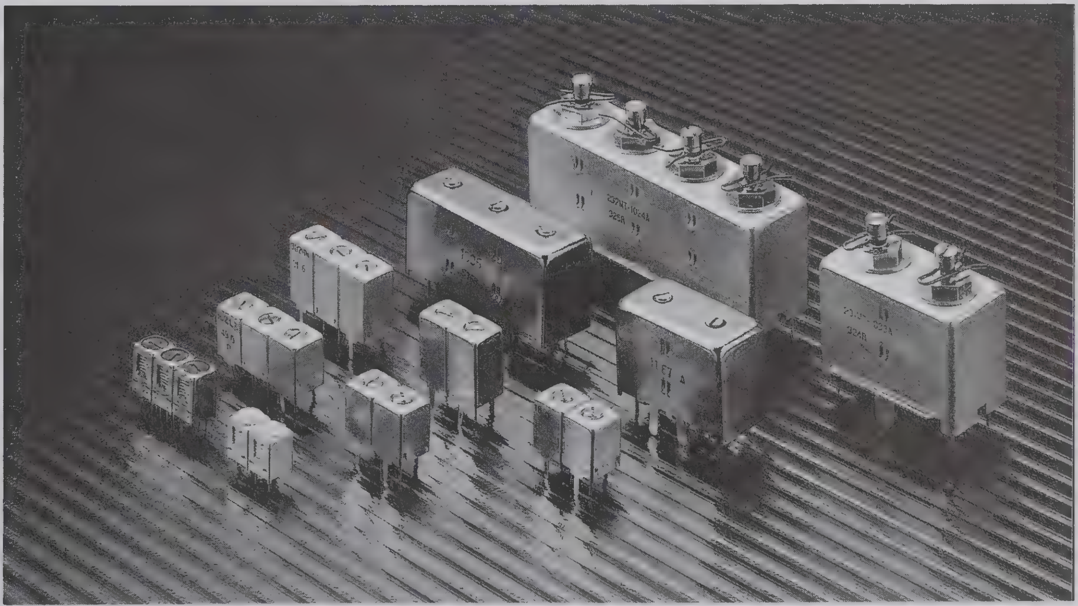
However, TOKO engineers have solved the problem in another way. TOKO Helical Filters feature very low insertion loss in the passband of high frequencies. The design consists of a single layer helix wound on a low-loss form and enclosed in a highly conductive shield. One lead of the helical winding is connected directly to the shield (grounded) and the other end is an open circuit.

TOKO Helical Filters are manufactured utilizing the most progressive automatic winding and assembly equipment in the industry. The helical resonators' highly conductive shields are silver plated brass cavities, not cast cavities. This enables economical manufacturing.

These devices are manufactured with critical material control and exacting dimensional tolerance for precise coupling of the filter. This provides excellent stability and uniformity.

Because of minor differences between TOKO's standard test equipment and your actual circuit, it is recommended that final alignment be performed in your circuit.

Various packaging schemes are available, in addition to bulk. Consult TOKO AMERICA for specifics.



TOKO

TOKO AMERICA, INC.

# HELICAL FILTERS

## *Environmental Testing Conditions*

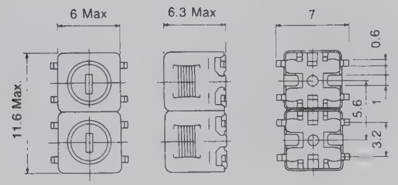
The Helical Filters described in this section conform to the following environmental tests. Consult TOKO AMERCIA for the characteristics of specific part numbers.

| | |
|---|---|
| Shock Test: | Application of 100G's, three times in each of three orientations. |
| Vibration Test: | Vibration in range of 10 to 55 Hz, 1.5mm overall amplitude, applied at the rate of 10-55-10Hz per minute for two hours in each of three orientations (total six hours). |
| High Temp. Test: | Exposed to 85° ± 2°C in a test chamber for 6 hours followed by room temperature for one hour. |
| Low Temp. Test: | Exposed to −25° ± 2°C in a test chamber for 6 hours followed by room temperature for one hour. |
| Humidity Test: | Exposed to 40°C, 90%-95% relative humidity for 96 hours followed by room temperature for one hour. |
| Temp. Cycling: | Five cycles at the rate of 30 minutes at −25°C, 10 minutes at +25°C and 30 minutes at 85°C per cycle followed by room temperature for one hour. |
| Solderability: | Filter terminals dipped in flux at ambient room temperature for 5 to 10 seconds and dipped in solder at 230°C ±5° for 2 ±.5 seconds, to within 1.5mm of the base. |

# 5CHLW Double Tuned
# 5CHW Double Tuned
# 5CHT Triple Tuned

*Frequency Range:* 5CHLW 780-1150MHz
5CHW, 5CHT 400-520MHz

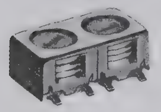
**5CHW**

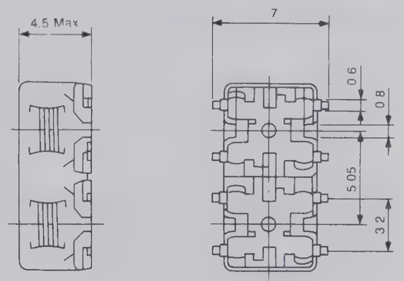


## Quality Features:

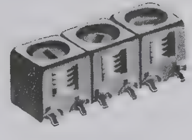
- Outstanding performance to size ratio. Low profile, only 4.5mm high in 5CHLW, 6.3mm high in 5CHW and 5CHT Ideal for the RF stage of pagers and other telecommunications equipment.
- Features low insertion loss at VHF.
- Silver plated brass cavity reduces insertion loss and improves selectivity.
- Ceramic tuning cup core for distributed capacitance adjustment is threaded directly into the metal cavity, offering increased stability and space savings. Wider frequency tuning range is the result of the ability to use larger ceramic cup core.
- Coil form dimensions are precisely controlled through the use of high quality molds during fabrication to assure consstent spacing between grooves and a constant winding pitch. This produces superior consistency in the coil winding which in turn results in higher stable electrical characteristics.

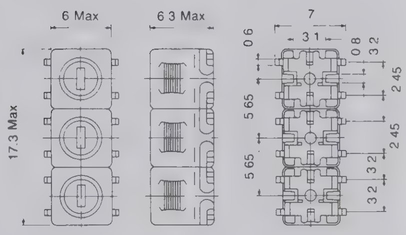
**5CHLW**





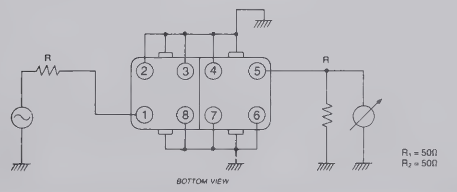
**5CHT**



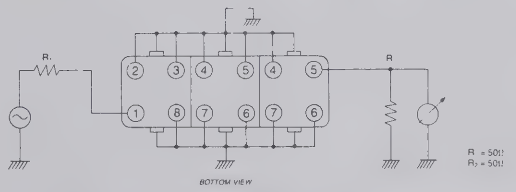


- Coil bobbin and base are formed from a specially compounded material with low insertion loss and produces outstanding stability against changes in temperature and humidity.
- To resist shock and vibration, each metal case has four upper and lower base supports to hold coil form at the reference point (window) between resonators for precise coupling.
- Reflows at 235 to 245°C, 5 to 10 seconds, maximum
- Package design is ideal for automatic assembly. Available on 12mm, 16mm or 24mm embossed tape and reel.

**5CHLW/5CHW**



**5CHT**



## TYPE 5CHLW (Double Tuned)

| TOKO Part[1] Number | Center Frequency (MHz) | Bandwidth @ −1dB (MHz) min. | Selectivity Fo − 100MHz (dB) min. | Selectivity Fo + 100MHz (dB) min. | Ripple (dB) max. | Insertion Loss (dB) max. |
|---|---|---|---|---|---|---|
| 477MS-1031A | 832.5 | 25 | 25 | 18 | 1.0 | 2.5 |
| 477MS-1032A | 850 | 25 | 25 | 17 | 1.0 | 2.5 |
| 477MS-1033A | 870 | 25 | 25 | 18 | 1.0 | 2.5 |
| 477MS-1034A | 902.5 | 25 | 24 | 18 | 1.0 | 2.5 |
| 477MS-1035A | 915 | 25 | 25 | 18 | 1.0 | 2.5 |
| 477MS-1036A | 933 | 25 | 25 | 18 | 1.0 | 2.5 |
| 477MS-1037A | 947.5 | 25 | 25 | 18 | 1.0 | 2.5 |
| 447MS-1038A | 950 | 25 | 22 | 17 | 1.0 | 2.5 |

*continued on next page*

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## STANDARD FILTERS SELECTION GUIDE

The Part Numbers shown in the table below are standard filters, which are readily available. TOKO will design and manufacture modified and custom filters to meet your requirements. If you do not find the filters for your application , please contact our sales office or representative office.

### *TYPE 5CHW (Double Tuned)*

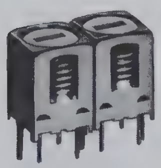
| TOKO Part(1) Number | Center Frequency (MHz) | Bandwidth @ −1dB (MHz) (dB) min. | Selectivity | | Ripple (dB) max. | Insertion Loss (dB) max. |
|---|---|---|---|---|---|---|
| | | | Fo − 50MHz (dB) min. | Fo + 50MHz (dB) min. | | |
| 492S-1051A | 420 | 10 | 14 | 20 | 0.5 | 3.0 |
| 492S-1052A | 425 | 10 | 14 | 20 | 0.5 | 3.0 |
| 492S-1053A | 427 | 10 | 14 | 20 | 0.5 | 3.0 |
| 492S-1054A | 430 | 10 | 14 | 20 | 0.5 | 3.5 |
| 492S-1055A | 435 | 10 | 14 | 20 | 0.5 | 3.5 |
| 492S-1056A | 440 | 10 | 13 | 18 | 0.5 | 3.5 |
| 492S-1057A | 450 | 10 | 12 | 17 | 0.5 | 3.5 |
| 492S-1058A | 452 | 10 | 12 | 17 | 0.5 | 3.5 |
| 492S-1059A | 456 | 10 | 12 | 16 | 0.5 | 3.5 |
| 492S-1060A | 460 | 10 | 12 | 16 | 0.5 | 3.5 |
| 492S-1061A | 463.5 | 10 | 12 | 16 | 0.5 | 3.5 |
| 492S-1062A | 465 | 10 | 12 | 16 | 0.5 | 3.5 |
| 492S-1063A | 470 | 10 | 12 | 15 | 0.5 | 3.5 |
| 492S-1064A | 480 | 10 | 12 | 15 | 0.5 | 3.5 |
| 492S-1065A | 510 | 10 | 12 | 15 | 0.5 | 3.5 |

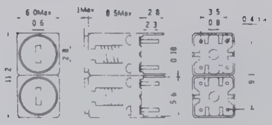
### *TYPE 5CHT (Triple Tuned)*

| TOKO Part(1) Number | Center Frequency (MHz) | Bandwidth @ −1dB (MHz) (dB) min. | Selectivity | | Ripple (dB) max. | Insertion Loss (dB) max. |
|---|---|---|---|---|---|---|
| | | | Fo − 50MHz (dB) min. | Fo + 50MHz (dB) min. | | |
| 493S-1066A | 395 | 10 | 33 | 33 | 0.5 | 4.5 |
| 493S-1067A | 420 | 10 | 30 | 30 | 0.5 | 4.5 |
| 493S-1068A | 425 | 10 | 30 | 30 | 0.5 | 4.5 |
| 493S-1069A | 430 | 10 | 30 | 30 | 0.5 | 4.5 |
| 493S-1070A | 435 | 10 | 30 | 30 | 0.5 | 4.5 |
| 493S-1071A | 440 | 10 | 27 | 27 | 0.5 | 4.5 |
| 493S-1072A | 450 | 10 | 27 | 27 | 0.5 | 4.5 |
| 493S-1073A | 452 | 10 | 27 | 27 | 0.5 | 4.5 |
| 493S-1074A | 456 | 10 | 27 | 27 | 0.5 | 4.5 |
| 493S-1075A | 460 | 10 | 27 | 27 | 0.5 | 4.5 |
| 493S-1076A | 465 | 10 | 27 | 27 | 0.5 | 4.5 |
| 493S-1077A | 470 | 10 | 27 | 27 | 0.5 | 4.5 |
| 493S-1078A | 480 | 10 | 26 | 26 | 0.5 | 4.5 |
| 493S-1079A | 485 | 10 | 26 | 26 | 0.5 | 4.5 |
| 493S-1080A | 510 | 10 | 25 | 25 | 0.5 | 4.5 |

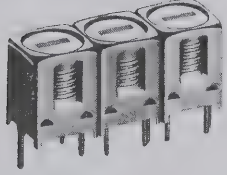
## 5HW Double Tuned
## 5HT Triple Tuned

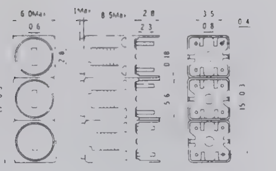
***Frequency Range:*** 350MHz-1.5GHz





*Top Tuned Tuning Tool: 71-1468*

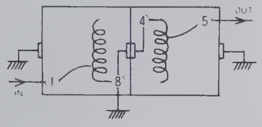




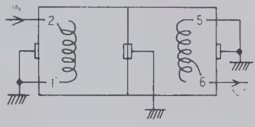
### *Quality Features:*

- Outstanding performance to size ratio. Low profile, only 9.5mm high.
- Ideal for the RF stage of pages and other telecommunications equipment.
- Feature very high frequencies and low insertion loss.
- Silver plated brass cavity reduces insertion loss and improves selectivity.
- Ceramic tuning cup core for distributed capacitance adjustment is threaded directly into the metal cavity, offering increased stability and space savings. Wider frequency tuning range is the result of the ability to use larger ceramic cup core.
- Coil form dimensions are precisely controlled through the use of high quality molds during fabrication to assure consistent spacing between grooves and a constant winding pitch. This produces superior consistency in the winding of the coil which in turn gives more stable electrical characteristics.
- Coil bobbin and base are formed from a specially compounded material which promotes low insertion loss and produces outstanding stability during changes in temperature and humidity.
- To resist shock and vibration, each metal case has four upper and lower base supports to hold coil form at consistent reference point (window) between resonators for precise coupling.
- Terminals feature rounded ends to facilitate PCB insertion and are pre-soldered for a reliable PCB connection.
- Grounding tabs on cavity simplify grounding and improve stability.

"A" CONNECTIONS

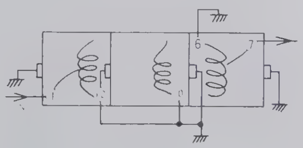


"F" CONNECTIONS

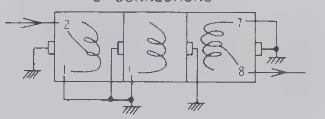


BOTTOM VIEW

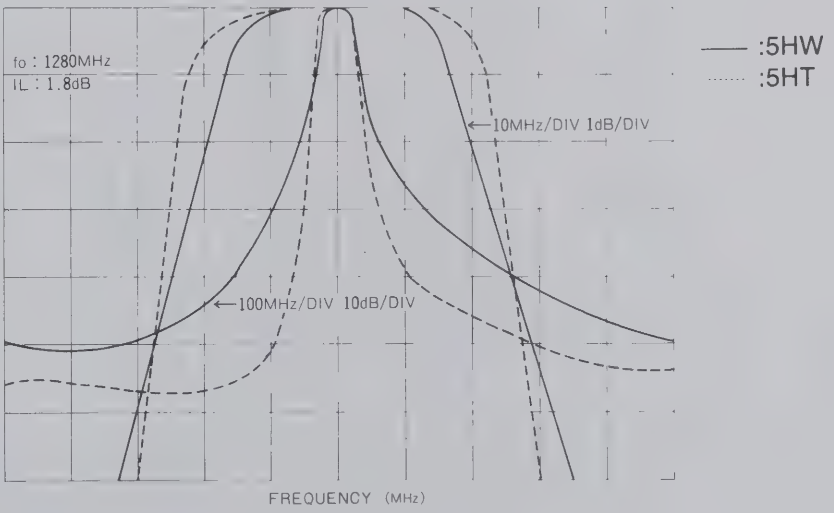
"F1" CONNECTIONS



"C" CONNECTIONS



BOTTOM VIEW



Typical Response curve (Reference Only)

*continued on next page*

*continued from previous page*

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

### *TYPE 5HW*

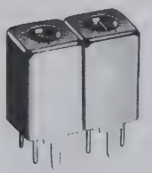
| TOKO Part Number | Bandwidth (BW:1dB) (MHz) | Selectivity (dB) | Fo ± | Selectivity (dB) | Ripple (dB) | Insertion Loss (dB) | Variable Frequency (MHz) |
|---|---|---|---|---|---|---|---|
| 5HW- 35045A- 365 | 6 min | 20 min | 50MHz | 25 min | 1.0 max | 4.5 max | 350- 395 |
| 5HW- 36535A- 380 | 7 | 20 | 50MHz | 25 | 1.0 | 4.5 | 365- 400 |
| 5HW- 39545A- 425 | 7 | 20 | 50MHz | 25 | 1.0 | 4.5 | 395- 440 |
| 5HW- 40545A- 430 | 7 | 20 | 50MHz | 25 | 1.0 | 4.5 | 405- 450 |
| 5HW- 44545A- 475 | 8 | 18 | 50MHz | 22 | 1.0 | 4.5 | 445- 490 |
| 5HW- 47535A- 505 | 10 | 16 | 50MHz | 20 | 1.0 | 4.5 | 475- 510 |
| 5HW- 51035A- 530 | 10 | 16 | 50MHz | 20 | 1.0 | 4.5 | 510- 545 |
| 5HW- 52535A- 545 | 10 | 16 | 50MHz | 20 | 1.0 | 4.5 | 525- 560 |
| 5HW- 58080A- 625 | 10 | 15 | 50MHz | 18 | 1.0 | 4.5 | 580- 660 |
| 5HW- 65535A- 670 | 14 | 23 | 100MHz | 26 | 1.0 | 3.5 | 655- 690 |
| 5HW- 68050A- 700 | 16 | 23 | 100MHz | 26 | 1.0 | 3.5 | 680- 730 |
| 5HW- 73050A- 735 | 16 | 23 | 100MHz | 26 | 1.0 | 3.5 | 730- 780 |
| 5HW- 78045A- 820 | 16 | 22 | 100MHz | 24 | 1.0 | 3.5 | 780- 825 |
| 5HW- 82560A- 880 | 16 | 21 | 100MHz | 24 | 1.0 | 3.5 | 825- 885 |
| 5HW- 88560A- 914 | 18 | 19 | 100MHz | 24 | 1.0 | 3.5 | 885- 945 |
| 5HW- 94555A- 959 | 18 | 17 | 100MHz | 20 | 1.0 | 3.5 | 945-1000 |
| 5HW-100090A-1010 | 16 | 14 | 100MHz | 18 | 1.0 | 3.5 | 1000-1090 |
| 5HW-109060A-1130 | 18 | 14 | 100MHz | 16 | 1.0 | 3.5 | 1090-1150 |
| 5HW-115045F-1195 | 24 | 18 | 100MHz | 20 | 1.0 | 3.5 | 1150-1195 |
| 5HW-120050F-1225 | 18 | 20 | 100MHz | 24 | 1.0 | 3.5 | 1200-1250 |
| 5HW-125055F-1305 | 25 | 18 | 100MHz | 20 | 1.0 | 3.5 | 1250-1305 |

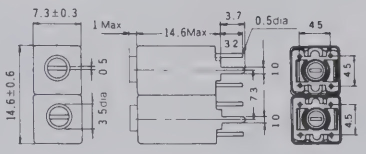
### *TYPE 5HT*

| TOKO Part Number | Bandwidth (BW:1dB) (MHz) | Selectivity (dB) | | Ripple (dB) | Insertion Loss (dB) | Variable Frequency (MHz) |
|---|---|---|---|---|---|---|
| | | +50MHz | −50MHz | | | |
| 5HT-36020AS-360 | 16 min | 33 min | 25 min | 1.0 max | 4.0 max | 360~ 380 |
| 5HT-38020AS-380 | 16 | 28 | 24 | 1.0 | 4.0 | 380~ 400 |
| 5HT-40020AS-400 | 11 | 34 | 31 | 1.0 | 4.0 | 400~ 420 |
| 5HT-42020AS-420 | 13 | 32 | 27 | 1.0 | 4.0 | 420~ 440 |
| 5HT-44020AS-440 | 14 | 28 | 25 | 1.0 | 4.0 | 440~ 460 |
| 5HT-46020AS-460 | 14 | 28 | 23 | 1.0 | 4.0 | 460~ 480 |
| 5HT-48030AS-480 | 14 | 26 | 22 | 1.0 | 4.0 | 480~ 510 |
| 5HT-49520AS-495 | 15 | 26 | 22 | 1.0 | 4.0 | 495~ 515 |
| 5HT-51535AS-515 | 16 | 25 | 20 | 1.0 | 4.0 | 515~ 550 |
| 5HT-52070AS-520 | 9 | 25 | 22 | 1.0 | 4.0 | 520~ 590 |
| 5HT- 59065F- 590 | 12 | 34 | 25 | 1.0 | 4.5 | 590~ 655 |
| 5HT- 63540F- 635 | 12 | 30 | 28 | 1.0 | 4.0 | 635~ 675 |
| 5HT- 65550F- 655 | 12 | 30 | 26 | 1.0 | 4.0 | 655~ 705 |
| 5HT- 70530F- 705 | 15 | 30 | 26 | 1.0 | 4.0 | 705~ 735 |
| 5HT- 73565F- 735 | 15 | 28 | 24 | 1.0 | 4.0 | 735~ 800 |
| 5HT- 80030F- 800 | 15 | 28 | 24 | 1.0 | 4.0 | 800~ 830 |
| 5HT- 83050F- 830 | 15 | 26 | 22 | 1.0 | 4.0 | 830~ 880 |
| 5HT- 88065F- 880 | 15 | 24 | 20 | 1.0 | 4.0 | 880~ 945 |
| 5HT- 94535F- 945 | 15 | 22 | 18 | 1.0 | 4.0 | 945~ 980 |
| 5HT- 98030F- 980 | 15 | 22 | 18 | 1.0 | 4.0 | 980~1010 |
| 5HT-101045F-1010 | 15 | 18 | 14 | 1.0 | 4.0 | 1010~1055 |
| 5HT-105535F-1055 | 15 | 18 | 14 | 1.0 | 4.0 | 1055~1090 |
| 5HT-109065F-1090 | 15 | 17 | 15 | 1.0 | 4.0 | 1090~1155 |
| 5HT-112570C-1125 | 15 | 20 | 18 | 1.0 | 4.5 | 1125~1195 |
| 5HT-123080C-1230 | 15 | 20 | 16 | 1.0 | 4.5 | 1230~1310 |

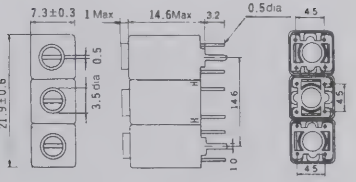
## 7HW Double Tuned
## 7HT Triple Tuned

***Frequency Range:*** 350MHz-1.2GHz





*Top Tuned*
*Tuning Tool: Standard*
*(−) Blade*
*(0.4x2.6)*



## *Quality Features:*

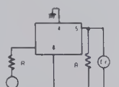
- Good performance to size ratio.
- Ideal for the RF or IF stage of spectrum analyzer, two-way radios, TVRO, cellular telephone and other telecommunications equipment.
- Features very high frequencies and low insertion loss.
- Silver plated brass cavity reduces insertion loss and improves selectivity
- Brass tuning slug for distributed capacitance adjustment is securely fitted into a threaded bushing at the top of the metal cavity, offering precise tuning, increased stability.
- Coil form dimensions are precisely controlled through the use of high quality molds during fabrication to assure consistent spacing between grooves and a constant winding pitch. This produces superior consistency in the winding of the coil which in turn gives more stable electrical characteristics.
- Coil bobbin and base are formed from a specially compounded material which promotes low insertion loss and produces outstanding stability during changes in temperature and humidity.
- Terminals feature rounded ends to facilitate PCB insertion and are pre-soldered for reliable PCB connection.
- Grounding tabs on cavity simplify grounding and improve stability.

*typical characteristics for MCA RADIOS*

### ■ PERSONAL SIGNALLING EQUIPMENT

7HW : 252HN-1423F

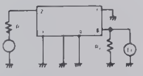
Test Circuits



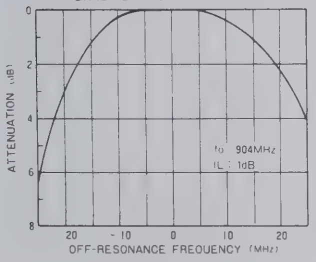
(BOTTOM VIEW)

7HT : 302HN-018B

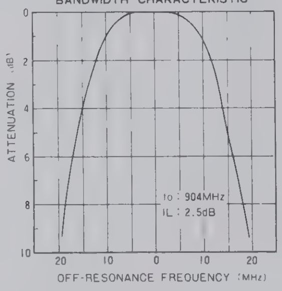
Test Circuits



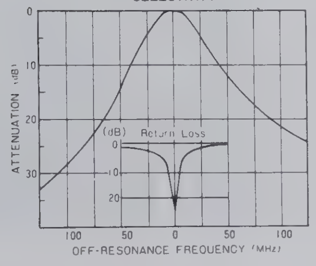
BANDWIDTH CHARACTERISTIC



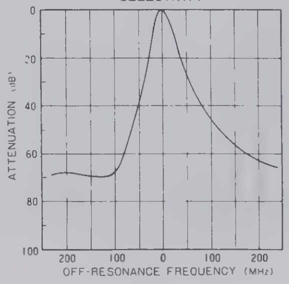
BANDWIDTH CHARACTERISTIC



SELECTIVITY



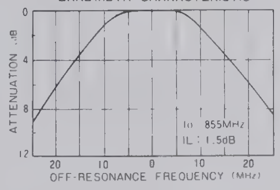
SELECTIVITY



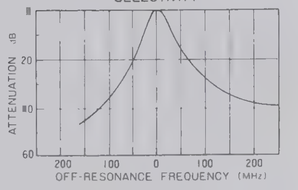
### ■ TYPICAL CHARACTERISTICS FOR MCA RADIOS (Multi channel access radio system in Japan)

ANTENNA CIRCUIT FILTER 7HW.252HN-1253

BANDWIDTH CHARACTERISTIC

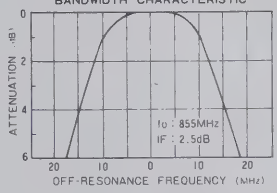


SELECTIVITY

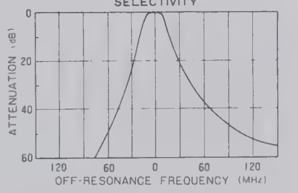


RF CIRCUIT FILTER 7HT:302HN-004

BANDWIDTH CHARACTERISTIC

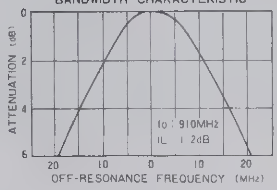


SELECTIVITY

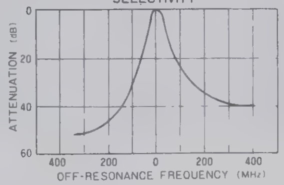


LOCAL OSC. FILTER 7HW:252HN-1228

BANDWIDTH CHARACTERISTIC



SELECTIVITY



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## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

### *TYPE 7HW*

| TOKO Part Number | Center Frequency (MHz) | Variable Frequency (MHz) | Bandwidth (BW:1dB) (MHz) min. | Selectivity | | Ripple (dB) max. | Loss (dB) max. |
|---|---|---|---|---|---|---|---|
| | | | | Fo+50MHz (dB) min. | Fo-50MHz (dB) min. | | |
| 7HW-35515A-360 | 360 | 355-370 | 7 | 25 | 35 | 0.5 | 3 |
| 7HW-36020A-370 | 370 | 360-380 | 7 | 25 | 35 | 0.5 | 3 |
| 7HW-37020A-380 | 380 | 370-390 | 7 | 20 | 35 | 0.5 | 3 |
| 7HW-38025A-390 | 390 | 380-405 | 7 | 20 | 28 | 0.5 | 3 |
| 7HW-39525A-410 | 410 | 395-420 | 7 | 18 | 25 | 0.5 | 3 |
| 7HW-40525A-420 | 420 | 405-430 | 7 | 18 | 25 | 0.5 | 3 |
| 7HW-42025A-435 | 435 | 420-445 | 8 | 18 | 25 | 0.5 | 3 |
| 7HW-43525A-450 | 450 | 435-460 | 8 | 18 | 25 | 0.5 | 3 |
| 7HW-45025A-460 | 460 | 450-475 | 8 | 16 | 20 | 0.5 | 3 |
| 7HW-46025A-475 | 475 | 460-485 | 8 | 16 | 20 | 0.5 | 3 |
| 7HW-47530A-490 | 490 | 475-505 | 10 | 14 | 18 | 0.5 | 3 |
| 7HW-49030A-505 | 505 | 490-520 | 10 | 14 | 18 | 0.5 | 3 |
| 7HW-51030A-525 | 525 | 510-540 | 10 | 12 | 14 | 0.5 | 3 |

### *TYPE 7HT*

| TOKO Part Number | Center Frequency (MHz) | Bandwidth (MHz) min. | Selectivity | | Ripple (dB) max. | Insertion Loss (dB) max. |
|---|---|---|---|---|---|---|
| | | | Fo-( )MHz (dB) min. | Fo+( )MHz (dB) min. | | |
| 302MXP-686R | 350 | 3.2 (BW3) | 17(- 6) | 14(+ 6) | 1.0 | 10.0 |
| 302MXP-713U | 360 | 18.0(BW1) | 35(-50) | 24(+50) | 1.0 | 3.0 |
| 302MXP-687R | 375 | 3.2(BW3) | 16(- 6) | 13(+ 6) | 1.0 | 10.0 |
| 302MXP-714U | 375 | 18.0(BW1) | 35(-50) | 24(+50) | 1.0 | 3.0 |
| 302MXP-673F1 | 380 | 4.0(BW1) | 30(-50) | 30(+50) | 1.0 | 5.0 |
| 302MXP-543D | 413 | 8.0(BW1) | 39(-50) | 37(+50) | 1.0 | 4.0 |
| 302MXP-688D | 415 | 20.0(BW3) | 36(-50) | 26(+50) | 3.0 | 3.0 |
| 302SXP-680D | 420 | 5.0(BW1) | 33(-40) | 27(+40) | 1.0 | 5.0 |
| 302MXP-712D | 425 | 3.2(BW1) | 35(-43) | 35(+43) | 1.0 | 5.5 |
| 302MXP-689D | 425 | 20.0(BW3) | 36(-50) | 26(+50) | 2.0 | 3.0 |
| 302SXP-681D | 430 | 5.0(BW1) | 33(-40) | 27(+40) | 1.0 | 5.0 |
| 302MXP-690D | 435 | 20.0(BW3) | 36(-50) | 26(+50) | 2.0 | 3.0 |
| 302MXP-561D | 454 | 10.0(BW1) | 28(-28) | 19(+28) | 1.0 | 4.0 |
| 302MXP-691D | 455 | 20.0(BW3) | 36(-50) | 26(+50) | 2.0 | 3.0 |
| 302MXP-674D | 455 | 8.0(BW3) | 25(-30) | 22(+30) | 1.0 | 4.0 |
| 302MXP-590D | 460 | 14.0(BW1) | 33(-40) | 23(+40) | 1.0 | 3.0 |
| 302MXP-611D1 | 465 | 10.0(BW1) | 28(-30) | 20(+30) | 1.0 | 3.5 |

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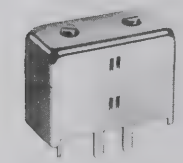
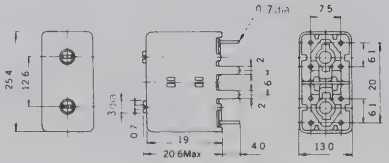
## *TYPE 7HT*

| TOKO Part Number | Center Frequency (MHz) | Bandwidth (MHz) | Selectivity | | Ripple (dB) max. | Insertion Loss (dB) max. |
|---|---|---|---|---|---|---|
| | | | Fo − ( )MHz (dB) min. | Fo + ( )MHz (dB) min. | | |
| 302MNP-539Q | 479.5 | 30.0 (BW3) | 18(−50) | 18(+50) | 1.0 | 3.5 |
| 302MXP-567A | 479.5 | 25.0(BW3) | 25(−50) | 22(+50) | 1.0 | 2.5 |
| 302MXP-677A | 485 | 20.0(BW3) | 20(−50) | 18(+50) | 1.0 | 2.5 |
| 302MNP-541U | 497 | 20.0(BW1) | 30(−50) | 18(+50) | 1.0 | 2.5 |
| 302MXP-667D | 510 | 15.0(BW3) | 30(−40) | 23(+40) | 1.0 | 3.5 |
| 302HXP-721D1 | 510 | 19.0(BW3) | 27(−40) | 19(+40) | 1.0 | 2.5 |
| 302MXP-606F | 600 | 15.0(BW1) | 16(−30) | 11(+30) | 1.0 | 3.5 |
| 302MNP-540D | 612 | 30.0(BW3) | 24(−50) | 16(+50) | 1.0 | 4.0 |
| 302HXP-568D1 | 612 | 25.0(BW3) | 30(−50) | 20(+50) | 1.0 | 2.5 |
| 302MXP-675D | 645 | 20.0(BW1) | 25(−50) | 18(+50) | 1.0 | 3.0 |
| 302HXP-651S | 835 | 16.0(BW1) | 17(−45) | 15(+45) | 1.0 | 3.5 |
| 302HXP-652S | 880 | 18.0(BW1) | 16(−45) | 14(+45) | 1.0 | 3.5 |

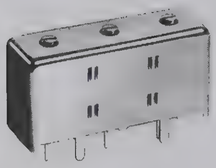
## CBW Double Tuned
## CBT Triple Tuned

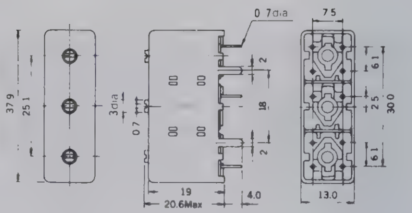
***Frequency Range:*** 100MHz-220MHz





*Top Tuned*
*Tuning Tool: Standard*
*(–) Blade*
*(0.5x2.6)*





### *Quality Features:*

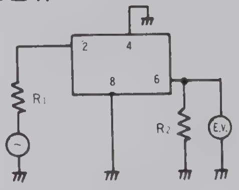
- Good performance to size ratio.
- Superior resistance to shock, vibration, temperature and humidity variations.
- Ideal for the VHF band, such as CATV, where low insertion and very high selectivity are important.
- Nickel plated copper shield reduces insertion loss and improves selectivity.
- Brass tuning slug for distributed capacitance adjustment is a block form precisely fitted to a threaded adjustment screw for very fine adjustment. A spring between the block and top of the shield provides additional pressure to maintain setting and a constant grounding path.
- Coil form dimensions are precisely controlled through the use of high quality molds during fabrication to assure consistent spacing between grooves and a constant winding pitch. This produces superior consistency in the winding of the coil, which in turn gives more stable electrical characteristics.
- Dividing plate between coil forms is soldered to maintain consistent reference point (window) between resonators for precise coupling.
- Coil bobbin and base are formed from a specially compounded material, which promotes low insertion loss and produces outstanding stability during changes in temperture and humidity.
- Terminals feature rounded ends to facilitate PCB insertion and pre-soldered for a reliable PCB connection.
- Grounding tabs on cavity simplify grounding and improve stability.

## EXAMPLES OF ELECTRICAL CHARACTERISTICS

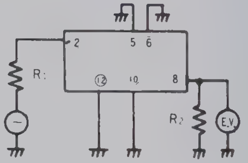
| Item \ Type | | CBW | CBT |
|---|---|---|---|
| Center Frequency | | 145MHz | 145MHz |
| Bandwidth, at 1dB | | 3MHz | 3MHz |
| Attenuation | fo + 10MHz | 20dB | 28dB |
| | fo − 10MHz | 22dB | 35dB |
| Ripple | | 0.3dB | 0.5dB |
| Insertion Loss | | 1.3dB | 2dB |
| Impedance | | 50Ω | 50Ω |

## TEST CIRCUITS (BOTTOM VIEW)

CBW

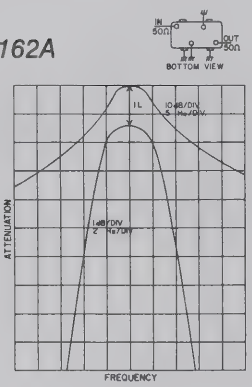


CBT

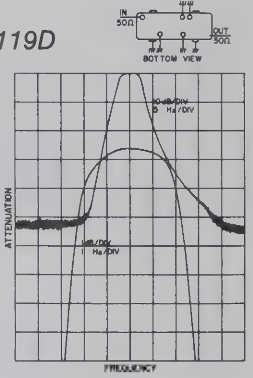


Notes: 1. Case lugs must be grounded

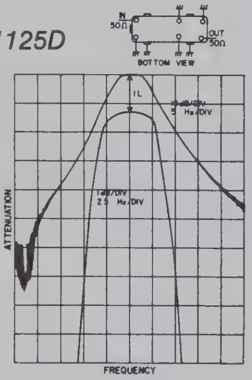
*CBW*
*271MT-1162A*



*CBT*
*272MT-1119D*



*CBT*
*272MT-1125D*



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## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

### *TYPE CBW*

| TOKO Part Number | Center Frequency (MHz) | Bandwidth @ −1dB (MHz) min. | Selectivity | | Ripple (dB) max. | Insertion Loss (dB) max. | Tuning Range (MHz) | |
|---|---|---|---|---|---|---|---|---|
| | | | Fo − 15MHz (dB) min. | Fo + 15MHz (dB) min. | | | | |
| 271MT-1149A | 99 | 3.0 min. | 28 | 18 | 1.0 | 3.5 | 97 | 101 |
| 271MT-1150A | 103 | 3.0 | 29 | 18 | 1.0 | 2.5 | 101 | 105 |
| 271MT-1151A | 107.5 | 3.0 | 30 | 18 | 0.5 | 2.5 | 105 | 109 |
| 271MT-1152A | 111 | 3.0 | 28 | 18 | 0.5 | 2.5 | 109 | 113 |
| 271MT-1153A | 115 | 2.0 | 32 | 20 | 0.5 | 2.5 | 113 | 117 |
| 271MT-1154A | 119 | 2.5 | 29 | 21 | 0.5 | 2.5 | 117 | 121 |
| 271MT-1155A | 122 | 2.0 | 27 | 25 | 0.5 | 2.5 | 119 | 125 |
| 271MT-1156A | 126 | 3.0 | 24 | 23 | 0.5 | 2.5 | 123 | 129 |
| 271MT-1157A | 131 | 3.0 | 23 | 23 | 0.5 | 2.5 | 127 | 135 |
| 271MT-1158A | 138 | 2.0 | 27 | 24 | 0.5 | 3.0 | 133 | 143 |
| 271MT-1159A | 146 | 2.5 | 27 | 22 | 0.5 | 3.0 | 141 | 151 |
| 271MT-1160A | 154 | 2.5 | 23 | 20 | 0.5 | 2.5 | 149 | 159 |
| 271MT-1161A | 164 | 2.5 | 27 | 24 | 0.5 | 3.0 | 157 | 167 |
| 271MT-1162A | 171 | 2.5 | 18 | 16 | 0.5 | 2.5 | 165 | 177 |
| 271MT-1163A | 182.5 | 3.0 | 23 | 20 | 0.5 | 3.0 | 175 | 190 |
| 271MT-1164A | 194.5 | 2.5 | 26 | 22 | 0.5 | 3.5 | 187 | 202 |
| 271MT-1165A | 207.5 | 2.5 | 25 | 23 | 0.5 | 3.5 | 200 | 215 |
| 271MT-1166A | 220 | 2.0 | 17 | 16 | 0.5 | 3.0 | 210 | 230 |
| 271MT-1134A | 138 | 2.2 | 20( − 10MHz) | 18( + 10MHz) | 1.0 | 2.5 | 134 | 142 |
| 271MT-1136A | 167 | 2.4 | 19( − 10MHz) | 17( + 10MHz) | 1.0 | 2.5 | 162 | 171 |
| 271MT-1142A | 176 | 2.6 | 16( − 10MHz) | 15( + 10MHz) | 1.0 | 2.5 | 170 | 182 |
| 271MT-1143A | 187 | 2.8 | 15( − 10MHz) | 14( + 10MHz) | 1.0 | 2.5 | 180 | 195 |
| 271MT-1145A | 216 | 3.0 | 15( − 10MHz) | 14( + 10MHz) | 1.0 | 3.0 | 207 | 225 |

### *TYPE CBT*

| TOKO Part Number | Center Frequency (MHz) | Bandwidth (MHz) Min. | Selectivity | | Ripple (dB) max. | Insertion Loss (dB) max. |
|---|---|---|---|---|---|---|
| | | | Fo − ( )MHz (dB) min. | Fo + ( )MHz (dB) min. | | |
| 272MT-1173A | 100 | 4.0(BW3) | 30( − 15) | 30( + 15) | 1.0 | 4.0 |
| 272MT-1230D | 107 | 4.0(BW3) | 44( − 10) | 26( + 15) | 1.0 | 4.5 |
| 272MT-1180A | 110 | 3.0(BW3) | 37( − 10) | 30( + 10) | 1.0 | 5.5 |
| 272MT-1177D | 124 | 3.5(BW3) | 21( − 6) | 17( + 6) | 1.0 | 3.5 |
| 272MT-1175D | 130 | 3.0(BW3) | 21( − 5) | 18( + 5) | 1.0 | 5.5 |
| 272MT-1176D | 133.7 | 3.5(BW3) | 23( − 6) | 18( + 6) | 1.0 | 3.5 |
| 272MT-1224L | 134 | 5.0(BW3) | 30( − 10) | 22( + 10) | 1.0 | 3.5 |
| 272MT-1116A | 134 | 5.0(BW1) | 24( − 15) | 24( + 15) | 1.0 | 3.0 |
| 272MT-1169D | 137.5 | 2.0(BW1) | 35( − 10) | 30( + 10) | 1.0 | 4.5 |
| 272MT-1113D | 140.21 | 6.0(BW6) | 25( − 10) | 21( + 10) | 1.0 | 5.0 |
| 272MT-1117D | 140.21 | 3.7(BW1) | 26( − 10) | 25( + 10) | 1.0 | 3.0 |
| 272MT-1119D | 143 | 3.0(BW1) | 35( − 10) | 22( + 10) | 1.0 | 4.0 |
| 272MT-1114A | 143 | 6.0(BW1) | 15( − 10) | 12( + 10) | 1.0 | 2.5 |
| 272MT-1181D | 147 | 4.0(BW3) | 20( − 6) | 15( + 6) | 1.0 | 3.5 |
| 272MT-1222A | 154 | 2.0(BW1) | 20( − 5) | 15( + 5) | 1.0 | 3.0 |
| 272MT-1219A | 156.7 | 1.5(BW3) | 40( − 6) | 25( + 6) | 1.0 | 7.0 |
| 272MT-1124D | 157 | 3.5(BW3) | 17( − 6) | 13( + 6) | 1.0 | 3.5 |
| 272MT-1174A | 159 | 7.0(BW3) | 35( − 20) | 33( + 20) | 1.0 | 3.0 |
| 272MT-1123A | 160 | 1.5(BW1) | 45( − 15) | 45( + 15) | 1.0 | 6.0 |
| 272MT-1221A | 161 | 2.2(BW1) | 32( − 10) | 40( + 10) | 1.0 | 4.5 |
| 272MT-1218A | 161.3 | 1.5(BW3) | 40( − 6) | 25( + 6) | 1.0 | 6.0 |
| 272MT-1148A | 164 | 0.8(BW1) | 35( − 5) | 29( + 5) | 1.0 | 8.5 |

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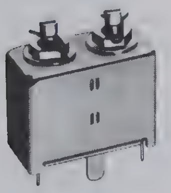
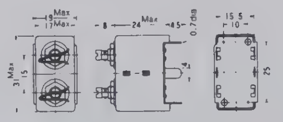
## *TYPE CBT*

| TOKO Part Number | Center Frequency (MHz) | Bandwidth (MHz) min. | Selectivity | | Ripple (dB) max. | Insertion Loss (dB) max. |
|---|---|---|---|---|---|---|
| | | | Fo − ( )MHz (dB) min. | Fo + ( )MHz (dB) min. | | |
| 272MT-1118D | 165 | 3.9(BW1) | 15(−10) | 16(+10) | 1.0 | 3.0 |
| 272MT-1120A | 169 | 3.5(BW3) | 35(−10) | 25(+10) | 1.0 | 6.0 |
| 272MT-1125D | 171 | 4.4(BW1) | 16(−10) | 14(+10) | 1.0 | 2.5 |
| 272MT-1126D | 177 | 4.0(BW1) | 15(−10) | 13(+10) | 1.0 | 3.0 |
| 272MT-1127F | 183 | 4.0(BW1) | 17(−10) | 17(+10) | 1.0 | 3.0 |
| 272MT-1131A | 185 | 3.0(BW3) | 24(− 6) | 20(+ 6) | 1.0 | 5.0 |
| 272MT-1128F | 189 | 4.0(BW1) | 19(−10) | 18(+10) | 1.0 | 3.5 |
| 272MT-1208A | 194.5 | 4.0(BW3) | 45(−15) | 35(+15) | 1.0 | 4.5 |
| 272MT-1129F | 195 | 4.2(BW1) | 18(−10) | 18(+10) | 1.0 | 3.0 |
| 272MT-1182A | 196 | 3.0(BW3) | 36(−10) | 31(+10) | 1.0 | 5.0 |
| 272MT-1195A | 200 | 3.0(BW3) | 19(− 6) | 17(+ 6) | 1.0 | 7.0 |
| 272MT-1130F | 201 | 4.5(BW1) | 16(−10) | 16(+10) | 1.0 | 3.0 |
| 272MT-1132A | 215 | 4.0(BW3) | 15(− 6) | 14(+ 6) | 1.0 | 4.0 |
| 272MT-1209A | 220 | 5.0(BW3) | 40(−15) | 30(+15) | 1.0 | 4.5 |
| 272MT-1146A | 223 | 4.0(BW3) | 30(−10) | 22(+10) | 1.0 | 4.5 |
| 272MT-1188A | 226.4 | 2.5(BW1) | 32(−10) | 25(+10) | 1.0 | 6.0 |
| 272MT-1225L | 234 | 10.0(BW3) | 28(−20) | 22(+20) | 1.0 | 3.0 |
| 272MT-1006A | 145 | 2.8(BW3) | 25(− 6) | 25(+ 6) | 5.0 | 8.0 |
| 272MT-1008A | 145 | 1.2(BW3) | 30(− 6) | 30(+ 6) | 5.0 | 8.0 |
| 272MT-1013A | 170 | 1.5(BW3) | 25(− 6) | 25(+ 6) | 5.0 | 8.0 |
| 272MT-1007A | 170 | 1.0(BW1) | 31(− 5) | 30(+ 5) | 5.0 | 9.0 |
| 272MT-1080A | 223 | 2.6(BW1) | 28(−10) | 40(+20) | 5.0 | 6.0 |

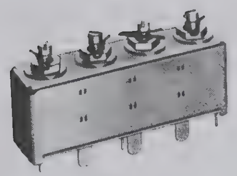
## HRW Double Tuned
## HRQ Quadrupled Tuned

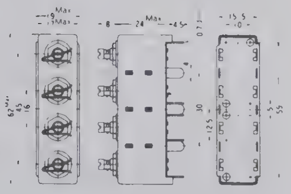
***Frequency Range:*** 350MHz-520MHz





*Top Tuned*
*Tuning Tool: Standard*
*(−) Blade*
*(2.6x0.5)*

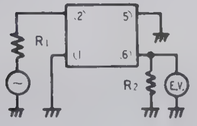




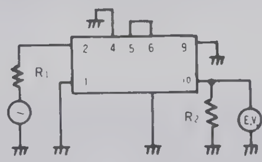
### *Quality Features:*

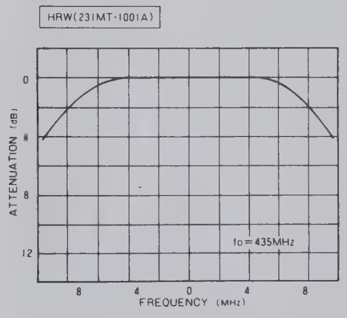
- Q is extremely high, typically 700 to 1000. Very good stability of center frequency and drift, bandwidth, selectivity, ripple and low insertion loss.
- Ideal for multi-stage circuits in UHF communications equipment, mobile radios, satellite base stations, and measuring instruments, such as spectrum analyzers.
- Base of cavity is fitted with a silver plated shield to greatly improve spurious response.
- Coil bobbin and base are formed from a specially compounded material which promotes low insertion loss and produces outstanding stability during changes in temperature and humidity.
- Base of molded form has integral pins that are inserted and heat formed into bottom cavity shield for excellent stability.
- Molded form covers windings on four sides to securely hold them in place.
- Silver plated copper shield case reduces insertion loss and improves selectivity.
- For distributed capacitance adjustment, the tuning slug is a block form precisely fitted to a threaded adjustment screw for very fine adjustment. A spring between the block and top of the shield provides additional pressure to maintain setting and a constant grounding path.
- Tap is welded (not soldered) to the winding to assure connection is held tight under extreme conditions.
- Terminals feature rounded ends to facilitate PCB insertion and are pre-soldered for reliable soldering.
- Grounding tabs on cavity simplify grounding and improve stability.

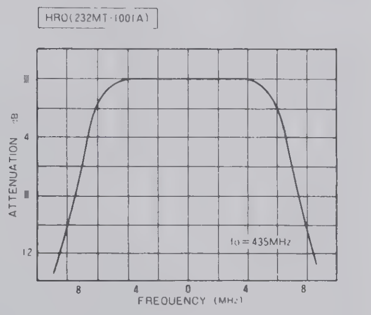
HRW

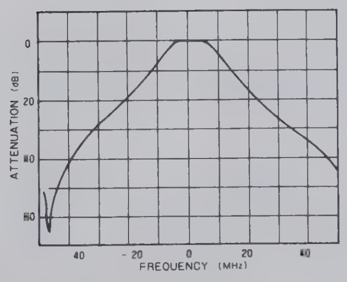


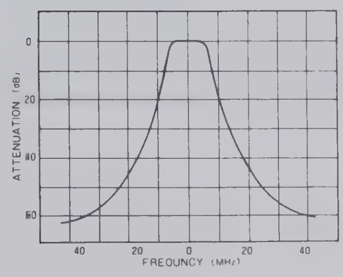
HRQ











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## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

### *TYPE HRW*

| TOKO Part Number | Center Frequency (MHz) | Bandwidth @ −1dB (MHz) min. | Selectivity Fo+20Mhz (dB) min. | Selectivity Fo−20MHz (dB) min. | Ripple (dB) max. | Insertion Loss (dB) max. | Approximate Tuning Range (MHz) |
|---|---|---|---|---|---|---|---|
| 231MT-1033A | 387.5 | 3.5 | 18 | 23 | 1.0 | 3.0 | 380-400 |
| 231MT-1032A | 407.5 | 4.0 | 19 | 22 | 1.0 | 2.5 | 400-420 |
| 231MT-1031A | 427.5 | 5.0 | 12 | 15 | 1.0 | 2.0 | 420-430 |
|  |  |  | Fo+30MHz | Fo−30MHz |  |  |  |
| 231MT-1018A | 432.5 | 3.5 | 21 | 28 | 1.0 | 4.5 | 430-450 |
| 231MT-1026A | 457.5 | 4.0 | 21 | 25 | 1.0 | 4.0 | 450-470 |
| 231MT-1027A | 477.5 | 4.0 | 21 | 25 | 1.0 | 4.0 | 470-490 |
| 231MT-1028A | 497.5 | 4.0 | 18 | 25 | 1.0 | 4.0 | 490-512 |

### *TYPE HRQ*

| TOKO Part Number | Center Frequency (MHz) | Bandwidth @ −3dB (MHz) min. | Selectivity Fo+15MHz (dB) min. | Selectivity Fo−15MHz (dB) min. | Ripple (dB) max. | Insertion Loss (dB) max. | Approximate Tuning Range (MHz) |
|---|---|---|---|---|---|---|---|
| 232MT-1023A | 407.5 | 7.5 | 33 | 33 | 3.0 | 7.5 | 400-420 |
| 232MT-1024A | 427.5 | 7.0 | 33 | 33 | 2.0 | 4.0 | 420-430 |
| 232MT-1051A | 440.0 | 10.0 | 23 | 25 | 2.0 | 3.5 | 430-450 |
| 232MT-1009A | 452.5 | 12.0 | 21 | 25 | 2.0 | 3.5 | 450-470 |
| 232MT-1013A | 477.5 | 10.0 | 20 | 23 | 3.0 | 3.5 | 470-490 |
| 232MT-1014A | 497.5 | 12.0 | 15 | 20 | 3.0 | 3.5 | 490-512 |

# ACTIVE FILTERS

TOKO's engineering expertise and 30 years of experience have enabled us to produce a line of high quality, compact and durable active filters.

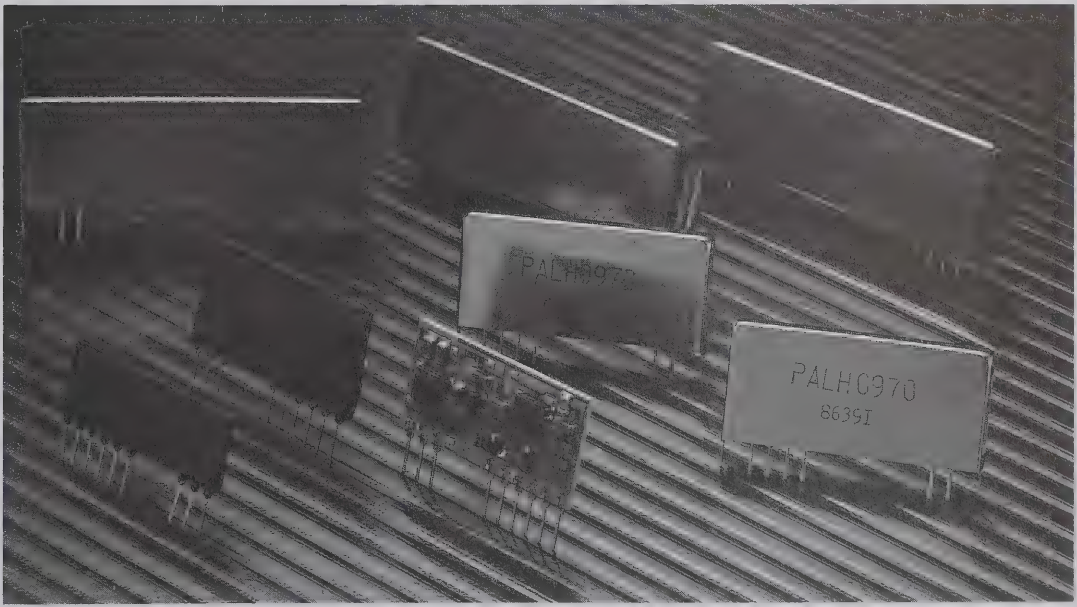
The trend toward active devices has accelerated with advances in miniaturization, which have made active elements available at prices competitive with and, in most cases, cheaper than those of many passive devices.

Active filters are desireable at low frequencies because they are lighter and smaller than passive filters and gains at the output may be specified. An active filter uses an operational amplifier (OP-AMP) to eliminate the need for inductance. This feature is important in filters for low frequencies where large coils would be necessary.

Passive filters are constructed with inductors, capacitors and resistors, and are relatively practical for middle or high frequency ranges. For lower frequency ranges; however, inductors, because of their size and practical performance limitations, are undesirable.

Hyrbrid IC type active filters . . .

- Are designed with low-distortion/low-noise in mind. Circuit design and careful selection of passive components provide ultra-low distortion and noise.
- Offer high-reliability, superior quality internal components, such as chip capacitors and alumina substrates, backed up by TOKO's technological experience, ensure high reliability.



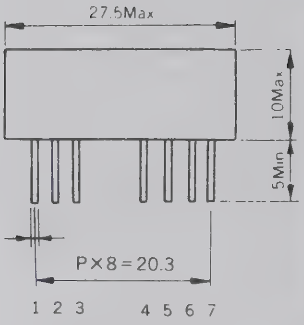
TOKO

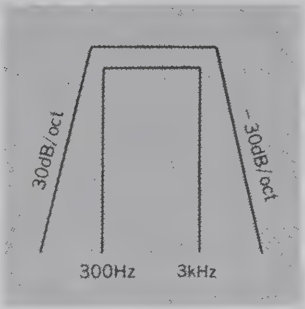
TOKO AMERICA, INC.

*1250 Feehanville Drive • Mt. Prospect, Illinois 60056 • TEL 708/297-0070 • FAX 708/699-7864*

## THB111A
## THB112A

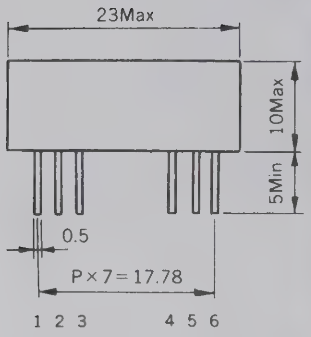
**THB111A**

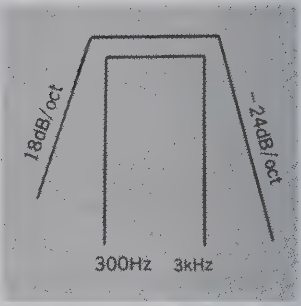




1 Vc
2 OUT PUT
3 GND
4 GND
5 GND
6 GND
7 IN PUT

**THB112A**





1 Vc
2 NC
3 OUT PUT
4 GND
5 GND
6 IN PUT

### *Quality Features:*

- The THB Series Active Filters are the perfect filter solution for cellular car phone applications, because they provide excellent filtering characteristics that stand up to harsh and extreme climate as well as varying power supply conditions; all in a very compact package.
- The THB filters can be used with a wide range of operating voltages for flexible designs.
- Available in a very thin light-weight SIP, ideal for applications where size and weight are important considerations.
- Hybrid IC, bonded to ceramic substrate, reduces size and increases reliability.
- Consumes very little current, ideally suited for battery operated devices.

**Maximum Ratings:**

| Item | Symbol | Rating | Condition |
|---|---|---|---|
| Power Supply Voltage | Vc | +18V | |
| Input Voltage | Vin | +15V | If Vc<15V, Vin ≤Vc |
| Operating Temperature | Top | −30 — +70°C | |
| Storage Temperature | Tsg | −40 — +85°C | |

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

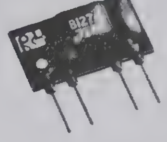
### *TYPE THB SERIES*

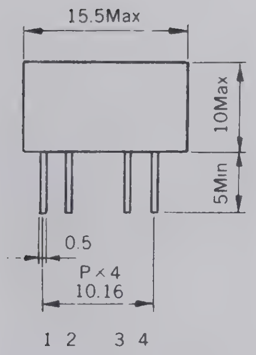
Band-Pass Active Filters
Pass Band = 300-3000Hz

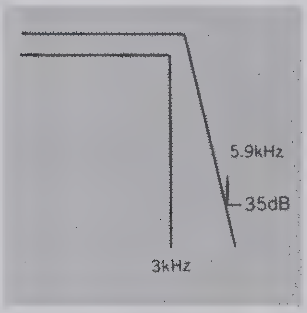
| | | Symbol | THB111A | THB112A |
|---|---|---|---|---|
| Stop Band Attenuation<br>Reference point<br>1kHz = 0dB | at 100Hz | AT1 | 30dB min | 18dB min |
| | at 120Hz | AT1 | | |
| | at 6.8kHz | AT2 | | 24dB min |
| | at 7.6kHz | AT2 | | |
| | at 7.9kHz | AT2 | 30dB min | |
| Pass Band Ripple .4-2.5kHz | | | ±1dB max. | ±1dB max. |
| Voltage Gain at 1kHz | | | .5dB max. | .5db max. |
| Distortion at 1kHz | | | .2% max | .2% max. |
| Current Consumption | | | 2.2mA max. | 2.2mA max. |

Test Conditions: Vc = +8V Vin = 1.0 Vrms Ta = 25 ± 5°C

**THB127B**

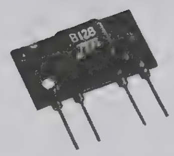


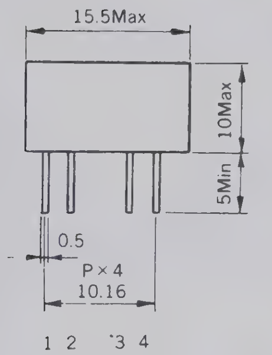


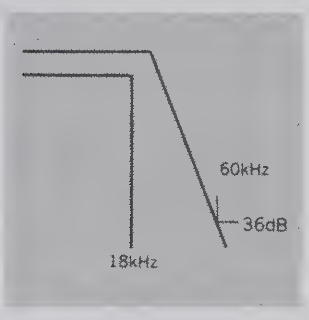


1 IN PUT
2 GND
3 OUT PUT
4 Vc

**THB128A**







1 IN PUT
2 GND
3 OUT PUT
4 Vc

## *Quality Features:*

- The THB Series Active Filters are the perfect filter solution for cellular car phone applications, because they provide excellent filtering characteristics that stand up to harsh and extreme climate as well as varying power supply conditions; all in a very compact package.
- The THB filters can be used with a wide range of operating voltages for flexible designs.
- Available in a very thin light-weight SIP, ideal for applications where size and weight are important considerations.
- Hybrid IC, bonded to ceramic substrate, reduces size and increases reliability.
- Consumes very little current, ideally suited for battery operated devices.

**Maximum Ratings:**

| Item | Symbol | Rating | Condition |
|---|---|---|---|
| Power Supply Voltage | Vc | +18V | |
| Input Voltage | Vin | +15V | If Vc<15V,<br>Vin ≤Vc |
| Operating Temperature | Top | −30 — +70°C | |
| Storage Temperature | Tsg | −40 — +85°C | |

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

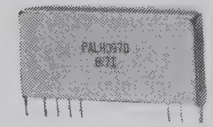
### *TYPE THB SERIES*

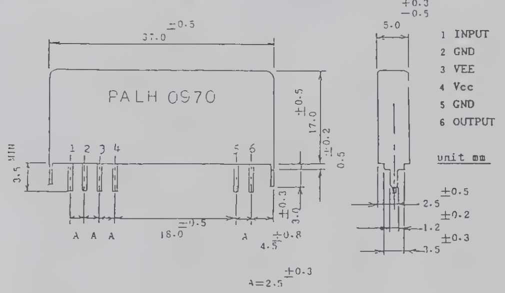
Low-Pass Active Filters
Low-Pass = 3kHz and 20kHz

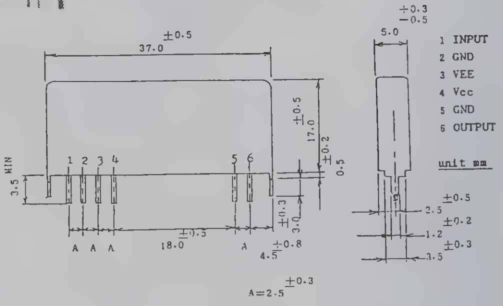
| | | Symbol | THB127B | THB128A |
|---|---|---|---|---|
| Cutoff Frequency | (REF) | Fc | 3.0kHz | 20kHz |
| Stop Band Attenuation<br>Reference point<br>1kHz = 0dB | at 3kHz | AT1 | 3dB max | |
| | at 5.9kHz | AT2 | 36dB min | |
| | at 22kHz | AT1 | | 3dB min |
| | at 60kHz | AT2 | | 36dB min |
| Pass Band Ripple | at .1-10kHz | RP | | ±.5dB max |
| | at .1-2.5kHz | RP | ±1dB max | |
| Voltage Gain | at 1kHz | G | ±.5dB max | ±.5dB max |
| Distortion | at 1kHz | K | .5% max | .05% max |
| Current Composition | | ID | 1.4mA max | 3mA max |

Test Conditions: Vc = +8V Vin = 1.0 Vrms Ta = 25 ± 5°C

## PALH 0970 (20kHz LPF)
## PALH 0972 (15kHz LPF)







### *Quality Features:*

- A ninth order low-pass filter with an internally buffered output amplifier.
- Ideal for use in compact, technologically advanced digital audio disc systems and PCM processors where very tight filtering standards and size are the most important considerations.
- Small Size - Complete use of SMT in this filter circuit, reduces size, allowing product designers to add features to, or curtail, the size of their audio and communications products.
- Ninth Order - Filtering gives precise cut-off with high attenuation, reducing distortion and insuring sound and data quality.
- Flat Passband - This filter has an extremely flat passband, ensuring better sound quality because of less passband distortion.
- Shielded - The PALH family of filters can come shielded to minimize external noise from motors, transformers, etc.
- Buffered Output Amplifier - Insures a quality signal and reduces your total component count, reducing possible sourcing and assembly problems.

## STANDARD DEVICES SELECTION GUIDE

The Part Numbers shown in the table below are standard devices, which are readily available. TOKO will design and manufacture modified and custom devices with specific characteristics to meet your requirements. If you do not find the device for your application in this catalog, please see Modified and Custom Request Form located in the rear of this catalog.

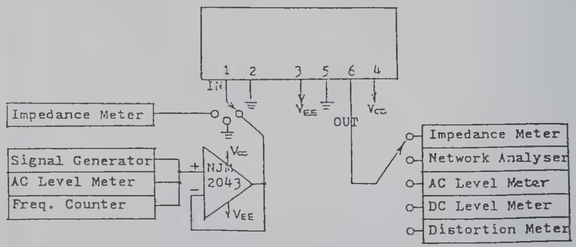
### *TYPE PALH 0970*

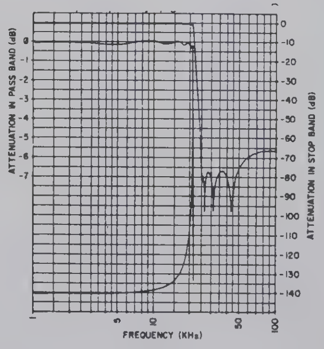
**Electrical Characteristics**

Vcc/Vee = ± 13 ~ ± 17V, Input Level = 1.2Vrms, Ta = 2 5°C

| | | | | |
|---|---|---|---|---|
| Ripple | at 5Hz ~ 18kHz)<br>(at 18kHz ~ 20kHz) | ± .3<br>± 1.0 | dB<br>dB | |
| Attenuation | (at 24.1 ~ 49.0kHz)<br>(at 49.1 ~ 100.0kHz) | 70.0<br>63.0 | dB<br>dB | min<br>min |
| Distortion | (at 1kHz)<br>(at 100Hz ~ 20kHz) | 0.005<br>0.006 | %<br>% | max<br>max |
| Voltage Gain | (at 1kHz) | −6.3 ~ −5.7 | dB | |
| Input Impedance | (at 10kHz) | 10 | KΩ | typ |
| Output Impedance | (at 10kHz) | 0.3 | Ω | typ |
| Group Delay | (at 1kHz)<br>(at 15kHz) | 39<br>76 | μsec<br>μsec | typ<br>typ |
| Offset Voltage | | 150 | mV | max |
| Noise Level | | 25 | μVrms | max |
| Current Consumption | | 20.0 | mA | max |

**Test Circuit**





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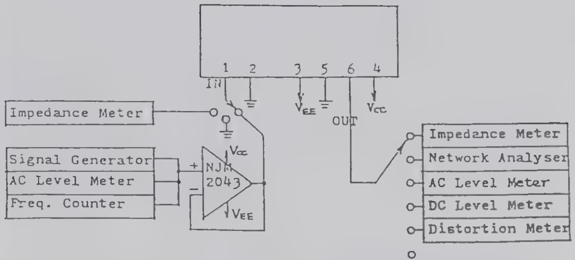
## *TYPE PALH 0972*

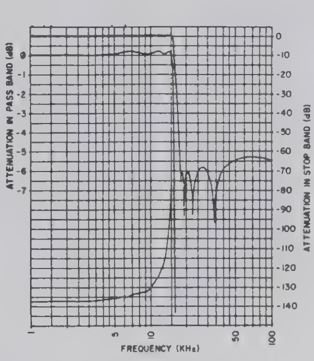
**Electrical Characteristics**

Vcc/Vee = ± 13 ~ ± 17V, Input Level = 1.2Vrms, Ta = 25ºC

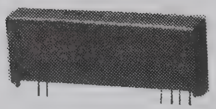
| | | | | |
|---|---|---|---|---|
| Ripple | at 5Hz ~ 13kHz)<br>(at 13kHz ~ 15kHz) | ± .3<br>± 1.0 | dB<br>dB | |
| Attenuation | (at 18kHz ~ 100kHz) | 60 | dB | min |
| Distortion | (at 1kHz)<br>(at 100Hz ~ 15kHz) | 0.05<br>0.05 | %<br>% | max<br>max |
| Voltage Gain | (at 1kHz) | −6.3 ~ −5.7 | dB | |
| Input Impedance | (at 10kHz) | 10 | KΩ | typ |
| Output Impedance | (at 10kHz) | 1.0 | Ω | typ |
| Group Delay | (at 1kHz)<br>(at 10kHz) | 50<br>80 | μsec<br>μsec | typ<br>typ |
| Offset Voltage | | 150 | mV | max |
| Noise Level | | 30 | μVrms | max |
| Current Consumption | | 20.0 | mA | max |

**Test Circuit**

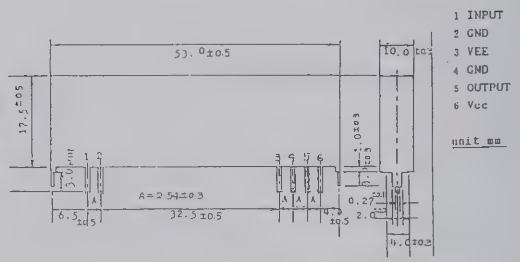


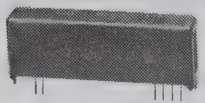


## PALH 1107E (20kHz LPF)
## PALH 1110 (20kHz LPF)
## PALH 1111 (15kHz LPF)

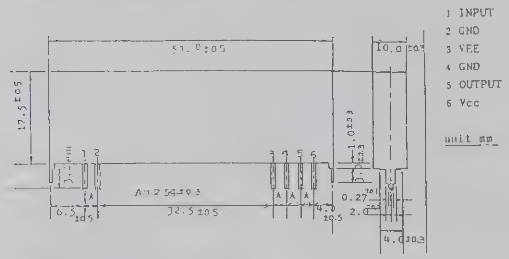


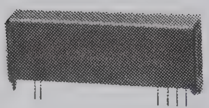
**1110**



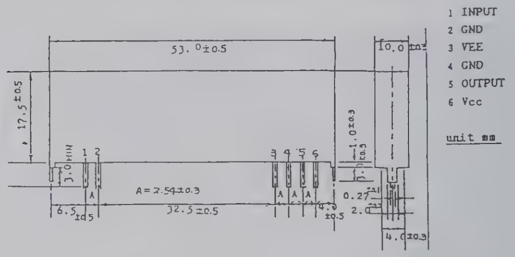


**1107E**





**1111**



### *Quality Features:*

- An eleventh order low-pass filter with an internally buffered output amplifier.
- Ideal for use in compact, technologically advanced digital audio disc systems and PCM processors where very tight filtering standards and size are the most important considerations.
- Small Size - Complete use of SMT in this filter circuit, reduces size, allowing product designers to add features to, or curtail, the size of their audio and communications products.
- Eleventh Order - Filtering gives very precise, sharp cutoff with high attenuation, reducing distortion and insuring sound and data quality.
- Flat Passband - This filter has an extremely flat passband, ensuring better sound quality because of less passband distortion.
- Shielded - The PALH family of filters can come shielded to minimize external noise from motors, transformers, etc.
- Buffered Output Amplifier - Insures a quality signal and reduces your total component count, reducing possible sourcing and assembly problems.

## STANDARD DEVICES SELECTION GUIDE

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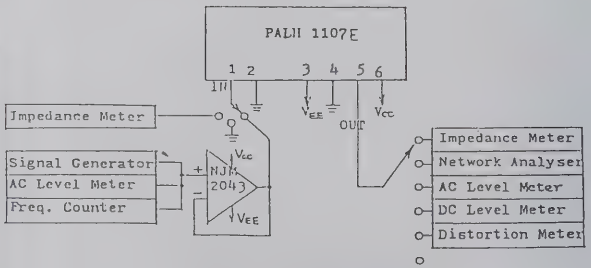
### *TYPE PALH 1107E*

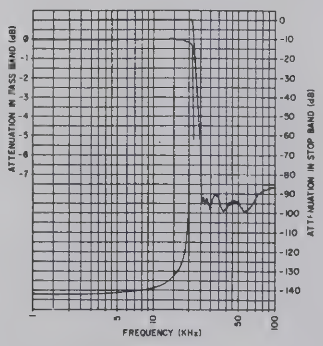
**Electrical Characteristics**

Vcc/Vee = ± 13 ~ ± 17V, Input Level = 1.2Vrms, Ta = 25°C

| | | | | |
|---|---|---|---|---|
| Ripple | at 5Hz ~ 18kHz)<br>(at 18kHz ~ 20kHz) | ± .3<br>±0.8 | dB<br>dB | |
| Attenuation | (at 24.1 ~ 100kHz) | 83 | dB | min |
| Distortion | (at 1kHz)<br>(at 100Hz ~ 20kHz) | 0.0035<br>0.0045 | %<br>% | max<br>max |
| Voltage Gain | (at 1kHz) | −6.3 ~ −5.7 | dB | |
| Input Impedance | (at 10kHz) | 10 | KΩ | typ |
| Output Impedance | (at 10kHz) | 0.3 | Ω | typ |
| Group Delay | (at 1kHz)<br>(at 15kHz) | 50<br>90 | μsec<br>μsec | typ<br>typ |
| Offset Voltage | | 150 | mV | max |
| Noise Level | | 25 | μVrms | max |
| Current Consumption | | 32 | mA | max |

**Test Circuit**





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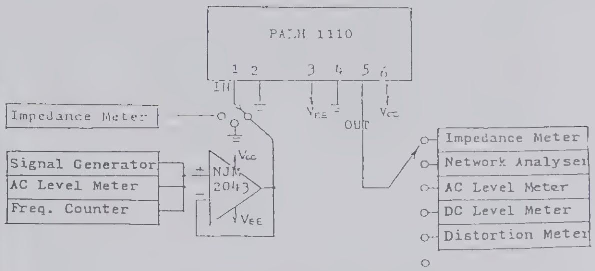
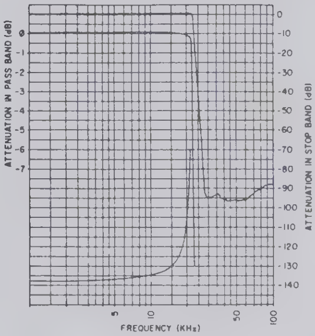
## *TYPE PALH 1110*

**Electrical Characteristics**
Vcc/Vee = ±13 ~ ±17V, Input Level = 1.2Vrms, Ta = 25°C

| | | | | |
|---|---|---|---|---|
| Ripple | at 5Hz ~ 18kHz)<br>(at 18kHz ~ 20kHz) | ±.3<br>±.8 | dB<br>dB | |
| Attenuation | (at 28 ~ 70kHz) | 90 | dB | min |
| Distortion | (at 1kHz)<br>(at 100Hz ~ 20kHz) | 0.0035<br>0.0045 | %<br>% | max<br>max |
| Voltage Gain | (at 1kHz) | −6.3 ~ −5.7 | dB | |
| Input Impedance | (at 10kHz) | 10 | KΩ | typ |
| Output Impedance | (at 10kHz) | .3 | Ω | typ |
| Group Delay | (at 1kHz)<br>(at 15kHz) | 50<br>90 | μsec<br>μsec | typ<br>typ |
| Offset Voltage | | 150 | mV | max |
| Noise Level | | 25 | μVrms | max |
| Current Consumption | | 32 | mA | max |

**Test Circuit**



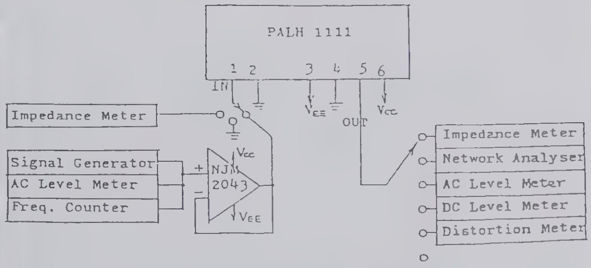


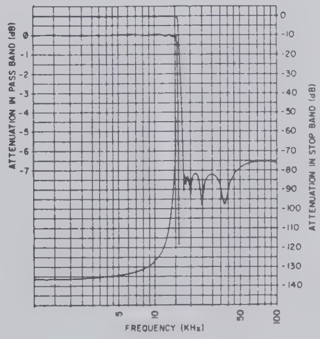
## *TYPE PALH 1111*

**Electrical Characteristics**
Vcc/Vee = ±13 ~ ±17V, Input Level = 1.2Vrms, Ta = 25°C

| | | | | |
|---|---|---|---|---|
| Ripple | at 5Hz ~ 13kHz)<br>(at 13kHz ~ 15kHz) | ± .3<br>±1.0 | dB<br>dB | |
| Attenuation | (at 28 ~ 70kHz) | 70 | dB | min |
| Distortion | (at 1kHz)<br>(at 100Hz ~ 15kHz) | 0.005<br>0.01 | %<br>% | max<br>max |
| Voltage Gain | (at 1kHz) | −6.3 ~ −5.7 | dB | |
| Input Impedance | (at 10kHz) | 10 | KΩ | typ |
| Output Impedance | (at 10kHz) | .3 | Ω | typ |
| Group Delay | (at 1kHz)<br>(at 10kHz) | 65<br>100 | μsec<br>μsec | typ<br>typ |
| Offset Voltage | | 150 | mV | max |
| Noise Level | | 30 | μVrms | max |
| Current Consumption | | 32 | mA | max |

**Test Circuit**



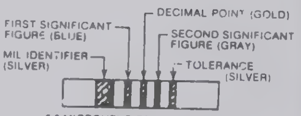


## Abbreviations Used in this Catalog

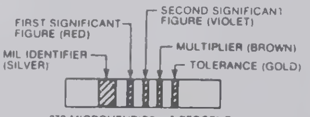
| | |
|---|---|
| A | Amperes |
| AC | Alternating Current |
| Adj. | Adjustable |
| Alum | Aluminum |
| AM | Amplitude Modulated |
| Amps | Amperes |
| AWG | American Wire Guage |
| C | Centigrade |
| CATV | Cable Television |
| CL | Close Wound |
| dB | Decibel |
| DC | Direct Current |
| Dia. | Diameter |
| F | Frequency |
| Fa | Anti-resonant Frequency |
| Fer | Ferrite |
| Fo | Self Resonant Frequency |
| Fosc | Frequency of Oscillation |
| Fr | Resonant Frequency |
| Freq. | Frequency |
| FM | Frequency Modulated |
| I | Current |
| I/O | Input/Output |
| IC | Integrated Circuit |
| IF | Intermediate Frequency |
| kHz | Kilohertz |
| L | Inductance |
| LC | Inductance & Capacitance |
| Leff | Effective Inductance |
| Lgth | Length |
| mA | Milliampere |
| Max. | Maximum |
| Min. | Minimum |
| mH | Millihenries |
| MHz | Megahertz |
| mm | Millimeters |
| No. | Number |
| Nom. | Nominal |
| pF | Picofarads |
| ppm | Parts per Millions |
| Q | Quality factor defined as inductance reactance divided by the resistance. |
| R | Resistance |
| Reff | Effective Loss |
| RF | Radio Frequency |
| SP | Space Wound |
| Sq. | Square |
| Thd | Thread |
| Typ | Typical |
| μF | Microfarads |
| μH | Microhenries |
| (omega) Ω | Ohms |
| (phi) | Diameter |

## Color Code TABLE For Cylindrical Coils

Cylindrical coils are marked with five colored bands. A silver band MIL identifier of double the width of the other bands, located near one end of the coil, identifies military radiofrequency coils; four other bands of equal width, three indicating the inductance in microhenries and the fourth band indicating the tolerance in percent. When either the first or second band of the three bands is gold, it represents the decimal point for inductance values less than 10. The other two bands represent significant figures. For inductance values of 10 or more, the first two bands represent significant figures, and the third band shall represent the multiplier. For small units, dots may be used instead of bands. The diameter of the MIL-identifier dot is larger than the other dots. The colors used are in accordance with MIL-STD-174. Typical color coding for units with inductance values less than 10 and for 10 or greater is shown on figure 1.


FIRST SIGNIFICANT FIGURE (BLUE)
DECIMAL POINT (GOLD)
SECOND SIGNIFICANT FIGURE (GRAY)
MIL IDENTIFIER (SILVER)
TOLERANCE (SILVER)

6 8 MICROHENRIES ±10 PERCENT


SECOND SIGNIFICANT FIGURE (VIOLET)
FIRST SIGNIFICANT FIGURE (RED)
MULTIPLIER (BROWN)
MIL IDENTIFIER (SILVER)
TOLERANCE (GOLD)

270 MICROHENRIES ±5 PERCENT

TABLE 1 Color code.

| Color | Significant figure | Multiplier[1] | Inductance tolerance (percent) |
|---|---|---|---|
| Black | 0 | 1 | — |
| Brown | 1 | 10 | — |
| Red | 2 | 100 | — |
| Orange | 3 | 1,000 | +3% |
| Yellow | 4 | — | — |
| Green | 5 | — | — |
| Blue | 6 | — | — |
| Violet | 7 | — | — |
| Gray | 8 | — | — |
| White | 9 | — | — |
| None[2] | — | — | — |
| Silver | — | — | ± 5% |
| Gold | • | — | ±10% |

[1] The multiplier is the factory by which the two significant figures are multiplied to yield the nominal inductance value.

[2] Indicates body color.

## WIRE GAGE CONVERSION CHART

| WIRE GAGE | DIAMETER<br>mm | WIRE GAGE | DIAMETER<br>mm | WIRE GAGE | DIAMETER<br>mm |
|---|---|---|---|---|---|
| 16 | 1.29 | 26 | .404 | 36 | .127 |
| 17 | | 27 | .361 | 37 | .112 |
| 18 | 1.016 | 28 | .320 | 38 | .102 |
| 19 | .914 | 29 | .287 | 39 | .0889 |
| 20 | .813 | 30 | .254 | 40 | .0787 |
| 21 | .724 | 31 | .226 | 41 | .0711 |
| 22 | .43 | 32 | .201 | 42 | .0633 |
| 23 | .574 | 33 | .180 | 43 | .0564 |
| 24 | .511 | 34 | .160 | 44 | .0502 |
| 25 | .456 | 35 | .142 | 45 | .0447 |

## Fractions/Decimals/Millimeters

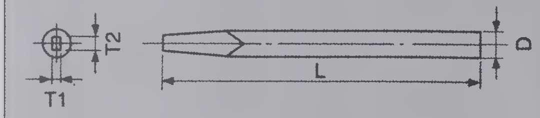
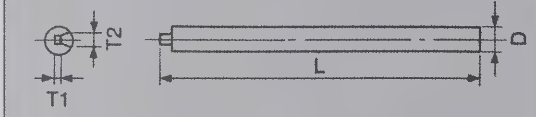
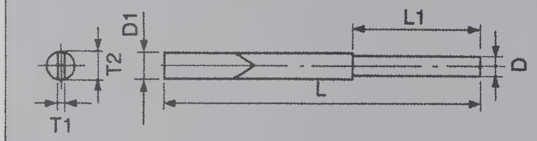
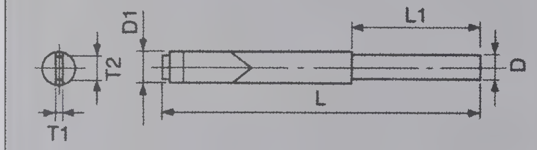
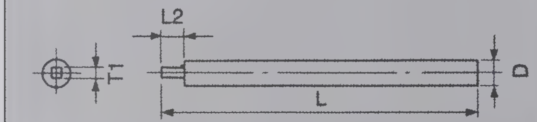
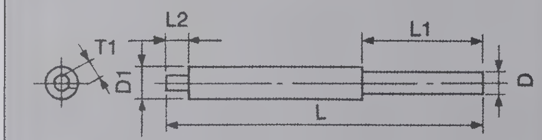
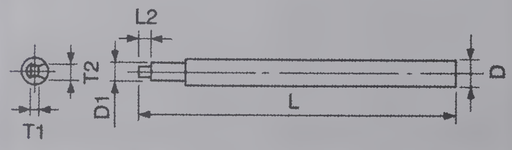
| INCHES | DECIMALS | MILLIMETERS | INCHES | DECIMALS | MILLIMETERS | INCHES | DECIMALS | MILLIMETERS |
|---|---|---|---|---|---|---|---|---|
| 1/64 | 0.015625 | 0.379 | 23/64 | .359375 | 9.128 | 11/16 | .6875 | 17.463 |
| 1/32 | .03125 | 0.794 | 3/8 | .3750 | 9.525 | 45/64 | .703125 | 17.859 |
| 3/64 | .046875 | 1.191 | 25/64 | .390625 | 9.922 | 23/32 | .71875 | 18.256 |
| 1/16 | .0625 | 1.588 | 13/32 | .40625 | 10.329 | 47/64 | .734375 | 18.653 |
| 5/64 | .078125 | 1.984 | 27/64 | .421875 | 10.716 | 3/4 | .7500 | 19.050 |
| 3/32 | .09375 | 2.381 | 7/16 | .4375 | 11.113 | 49/64 | .765625 | 19.447 |
| 7/64 | .109375 | 2.778 | 29/64 | .453125 | 11.509 | 25/32 | .78125 | 19.844 |
| 1/8 | .1250 | 3.175 | 15/32 | .46875 | 11.906 | 51/64 | .796875 | 20.241 |
| 9/64 | .140625 | 3.572 | 31/64 | .484375 | 12.303 | 13/16 | .8125 | 20.638 |
| 5/32 | .15625 | 3.696 | 1/2 | .5000 | 12.700 | 53/64 | .828125 | 21.034 |
| 11/64 | .171875 | 4.366 | 33/64 | 0.515625 | 13.097 | 27/32 | .84375 | 21.431 |
| 3/16 | .1875 | 4.763 | 17/32 | .53125 | 13.494 | 55/64 | .859375 | 21.828 |
| 13/64 | .203125 | 5.159 | 35/64 | .546875 | 13.891 | 7/8 | .8750 | 22.225 |
| 7/32 | .21875 | 5.556 | 9/16 | .5625 | 14.288 | 57/64 | .890625 | 22.622 |
| 15/64 | .234375 | 5.953 | 37/64 | .578125 | 14.684 | 29/32 | .90625 | 23.019 |
| 1/4 | .2500 | 6.350 | 19/32 | .59375 | 15.081 | 59/64 | .921875 | 23.416 |
| 17/64 | .265625 | 6.747 | 39/64 | .609375 | 15.478 | 15/16 | .9357 | 23.813 |
| 9/32 | .28125 | 7.144 | 5/8 | .6250 | 15.875 | 61/64 | .953125 | 24.209 |
| 19/64 | .296875 | 7.541 | 41/64 | .640625 | 16.272 | 31/32 | .96875 | 24.606 |
| 5/16 | .3125 | 7.938 | 21/32 | .65625 | 16.669 | 63/64 | .984375 | 25.003 |
| 21/64 | .328125 | 8.334 | 43/64 | .671875 | 17.066 | 1 | 1.000 | 25.400 |
| 11/32 | .34375 | 8.731 | | | | | | |

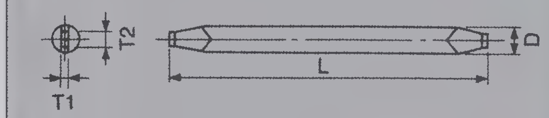
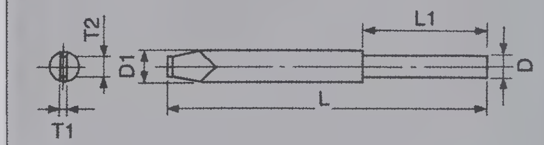
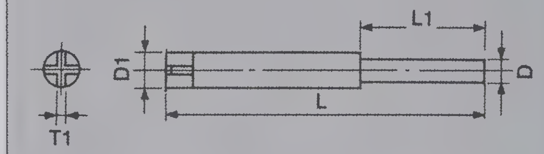
# Tuning Tools for Adjustable Coils

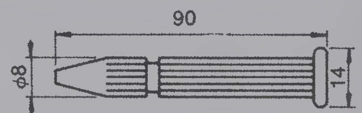
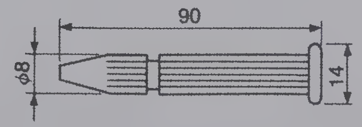
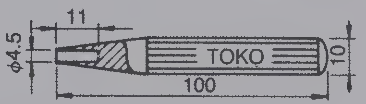
TOKO Adjustable Coils are tunable with either specific tools such as the ones listed and described on this page or, as noted for the specific type, with small phillips (+) or blade (−) screwdrivers. A choice of ceramic or plastic tips and plastic or metal handles are offered for some of the types.

| | Tuning Tools for Adjustable coils | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Driver Tip | | | | | | | | | | Holder | |
| Coil | Tip No. | Fig. | T2 | T1 | L | L1 | L2 | D | D1 | Material | Ceramic | Metal |
| 5CBL | 71-1608 | 7 | 0.8 | 0.5 | 25 | — | — | 2.4 | — | Ceramic | 71-1747 | PD # 2.5 |
| 5CE | 71-1608 | 7 | 0.8 | 0.5 | 25 | — | — | 2.4 | — | Ceramic | 71-1747 | PD # 2.5 |
| 5A | 71-1608 | 7 | 0.8 | 0.5 | 25 | — | — | 2.4 | — | Ceramic | 71-1747 | PD # 2.5 |
| 5K | 71-1608 | 7 | 0.8 | 0.5 | 25 | — | — | 2.4 | — | Ceramic | 71-1747 | PD # 2.5 |
| 4K | 71-1608 | 7 | 0.8 | 0.5 | 25 | — | — | 2.4 | — | Ceramic | 71-1747 | PD # 2.5 |
| 7KLS | 71-1608 | 7 | 0.8 | 0.5 | 25 | — | — | 2.4 | — | Ceramic | 71-1747 | PD # 2.5 |
| 7KN | 71-1772 | 2 | 1.3 | 0.5 | 25 | — | — | 2.4 | — | Ceramic | 71-1747 | PD # 2.5 |
| 7KS | 71-1325 | 2 | 1.3 | 0.55 | 25 | — | — | 2.4 | — | Ceramic | 71-1747 | PD # 2.5 |
| 7KM | 71-1325 | 2 | 1.3 | 0.55 | 25 | — | — | 2.4 | — | Ceramic | 71-1747 | PD # 2.5 |
| 4F | 71-1750 | 1 | 2.0 | 0.47 | 25 | — | — | 2.4 | — | Ceramic | 71-1747 | PD # 2.5 |
| 4P | 71-1472 | 2 | 1.6 | 0.5 | 25 | — | — | 2.4 | — | Ceramic | 71-1747 | PD # 2.5 |
| 5CD | 71-1472 | 2 | 1.6 | 0.5 | 25 | — | — | 2.4 | — | Ceramic | 71-1747 | PD # 2.5 |
| 5CDL | 71-1472 | 2 | 1.6 | 0.5 | 25 | — | — | 2.4 | — | Ceramic | 71-1747 | PD # 2.5 |
| 7ES | 71-1268-06 | 9 | 2.5 | 0.4 | 30 | 15 | — | 3.5 | 3.5 | Metal | | PD # 3.5 |
| 7PLA | 71-1268-03 | 8 | 2.5 | 0.5 | 30 | — | — | 3.5 | — | Metal | | PD # 3.5 |
| 5S | 71-1468 | 3 | 2.6 | 0.5 | 25 | 10 | — | 2.4 | 2.6 | Ceramic | 71-1747 | PD # 2.5 |
| 5M | 71-1468 | 3 | 2.6 | 0.5 | 25 | 10 | — | 2.4 | 2.6 | Ceramic | 71-1747 | PD # 2.5 |
| 5KP | 71-1468 | 3 | 2.6 | 0.5 | 25 | 10 | — | 2.4 | 2.6 | Ceramic | 71-1747 | PD # 2.5 |
| 5P | 71-1468 | 3 | 2.6 | 0.5 | 25 | 10 | — | 2.4 | 2.6 | Ceramic | 71-1747 | PD # 2.5 |
| 5V | 71-1607 | 4 | 2.6 | 0.5 | 25 | 10 | — | 2.4 | 3.6 | Ceramic | 71-1747 | PD # 2.5 |
| MC108 | 71-1608 | 7 | 0.8 | 0.5 | 25 | — | — | 2.4 | — | Ceramic | 71-1747 | PD # 2.5 |
| MC110 | 71-1605 | 6 | 1.9 | 6C | 25 | 10 | 6 | 2.4 | 3.6 | Ceramic | 71-1747 | PD # 2.5 |
| MC111 | 71-1325 | 2 | 1.3 | 0.55 | 25 | — | — | 2.4 | — | Ceramic | 71-1747 | PD # 2.5 |
| MC115 | 71-1325 | 2 | 1.3 | 0.55 | 25 | — | — | 2.4 | — | Ceramic | 71-1747 | PD # 2.5 |
| MC116 | 71-1325 | 2 | 1.3 | 0.55 | 25 | — | — | 2.4 | — | Ceramic | 71-1747 | PD # 2.5 |
| MC119 | 71-1325 | 2 | 1.3 | 0.55 | 25 | — | — | 2.4 | — | Ceramic | 71-1747 | PD # 2.5 |
| MC120 | 71-1605 | 6 | 1.9 | 6C | 25 | 10 | 6 | 2.4 | 3.6 | Ceramic | 71-1747 | PD # 2.5 |
| MC122 | 71-1325 | 2 | 1.3 | 0.55 | 25 | — | — | 2.4 | — | Ceramic | 71-1747 | PD # 2.5 |
| MC128 | 71-1605 | 6 | 1.9 | 6C | 25 | 10 | 6 | 2.4 | 3.6 | Ceramic | 71-1747 | PD # 2.5 |
| MC130 | 71-1605 | 6 | 1.9 | 6C | 25 | 10 | 6 | 2.4 | 3.6 | Ceramic | 71-1747 | PD # 2.5 |
| MC131 | 71-1470 | 5 | 1.4 | 4C | 25 | — | — | 2.4 | — | Ceramic | 71-1747 | PD # 2.5 |
| MC134 | 71-1325 | 2 | 1.3 | 0.55 | 25 | — | — | 2.4 | — | Ceramic | 71-1747 | PD # 2.5 |
| MC136 | 71-1325 | 2 | 1.3 | 0.55 | 25 | — | — | 2.4 | — | Ceramic | 71-1747 | PD # 2.5 |
| MC137 | 71-1325 | 2 | 1.3 | 0.55 | 25 | — | — | 2.4 | — | Ceramic | 71-1747 | PD # 2.5 |
| MC138 | 71-1325 | 2 | 1.3 | 0.55 | 25 | — | — | 2.4 | — | Ceramic | 71-1747 | PD # 2.5 |
| MC139 | 71-1608 | 7 | 0.8 | 0.5 | 25 | — | — | 2.4 | — | Ceramic | 71-1747 | PD # 2.5 |
| MC140 | 71-1604 | 2 | 1.3 | 0.75 | 25 | — | — | 2.4 | — | Ceramic | 71-1747 | PD # 2.5 |
| MC141 | 71-1608 | 7 | 0.8 | 0.5 | 25 | — | — | 2.4 | — | Ceramic | 71-1747 | PD # 2.5 |
| 7P + | 71-1285-01 | 10 | 4.0 | 0.6 | 25 | 10 | — | 2.4 | 4.0 | Metal | 71-1747 | PD # 2.5 |
| 7ES + | 71-1285-02 | 10 | 3.6 | 0.6 | 25 | 10 | — | 2.4 | 3.6 | Metal | 71-1747 | PD # 2.5 |
| 7TS + | 71-1285-03 | 10 | 3.4 | 0.6 | 25 | 10 | — | 2.4 | 3.4 | Metal | 71-1747 | PD # 2.5 |
| 10PA + | 71-1285-04 | 10 | 4.8 | 0.7 | 25 | 10 | — | 2.4 | 4.8 | Metal | 71-1747 | PD # 2.5 |
| 10EZ + | 71-1285-05 | 10 | 4.0 | 0.5 | 25 | 10 | — | 2.4 | 4.0 | Metal | 71-1747 | PD # 2.5 |
| HEX | 71-1605 | 6 | 1.9 | | 25 | 10 | 6 | 2.4 | 3.6 | Ceramic | 71-1747 | PD # 2.5 |
| BOX 1.5 | 71-1470 | 5 | 1.4 | | 25 | — | — | 2.4 | — | Ceramic | 71-1747 | PD # 2.5 |
| BOX 1.1 | 71-1469 | 5 | 1.0 | | 25 | — | — | 2.4 | — | Ceramic | 71-1747 | PD # 2.5 |

Shown above are TUNING TOOLS for each TOKO type. Occasionally the correct TUNING TOOL may be differ from above specific Tip No. Please contact TOKO for the most appropriate TUNING TOOLS for your application.

| SHAPE OF DRIVER TIP | Fig. |
|---|---|
|  | 1 |
|  | 2 |
|  | 3 |
|  | 4 |
|  | 5 |
|  | 6 |
|  | 7 |

| SHAPE OF DRIVER TIP | Fig. |
|---|---|
|  | 8 |
|  | 9 |
|  | 10 |

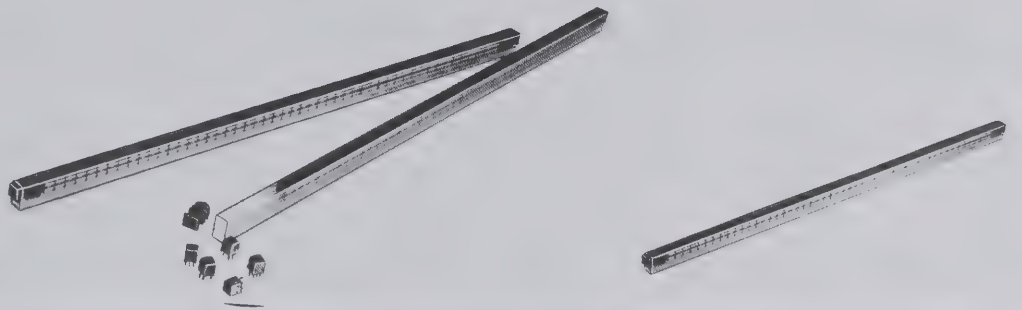
| HOLDER OF DRIVER TIP | PART No. |
|---|---|
|  | PD 2.5 |
|  | PD 3.5 |
|  | 71-1474 |

## Packaging of Coils and Filters for Automatic Insertion

Three forms of packaging are available, namely, cartridge, tray and taped, to meet with requirements for automatic insertion.

## Cartridge Form

**This form of packing is designed for the 5mm, 7mm and 10mm square, fixed coils and AM ceramic filters.**

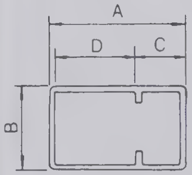


| Coil Size | Applicable Type | Cartridge No. | EIA Type No. | Form | Dimensions (Unit: mm) | | | | | Quantity (pcs) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Length | A | B | C | D | |
| 5mm | 5P, 5K | 99-0188 | LM120076H50 | H | 508 | 12.0 | 7.6 | 5.0 | 6.2 | 50 or 75 |
| | 5VUS, 5V(U)W, 5VNT | 99-0189 | LM163080H68 | W | 580 | 16.3 | 8.0 | 6.8 | 8.0 | Single: 90<br>Double: 45 |
| | 5VLUS, 5VL(U)W | 99-0250 | LM151080H68 | W | 600 | 15.1 | 8.0 | 6.8 | 6.6 | Single: 100<br>Double: 50 |
| 7mm | 7P, 7PA | 99-0181 | LM202098H72 | H | 414 | 20.2 | 9.8 | 7.2 | 11.8 | 50 |
| | 7KM, MC-134 | 99-0191 | LM220098H75 | H | 414 | 22.0 | 9.8 | 7.5 | 13.1 | 50 |
| | 7PL, 7KL | 99-0221 | LM170098H67 | H | 414 | 17.0 | 9.8 | 6.7 | 9.3 | 50 |
| | MC-122 | 99-0249 | LM183100H72 | H | 425 | 18.3 | 10.0 | 7.2 | 9.8 | 50 |
| | 7VS, 7VUS | 99-0255 | LM220098H72 | H | 414 | 22.0 | 9.8 | 7.2 | 14.1 | 50 |
| | 7VSW | 99-0256 | LM240114H72 | H | 508 | 24.0 | 11.4 | 7.2 | 15.8 | 25 |
| | 7PS | 99-0345 | LM202098H72 | C | 414 | 20.2 | 9.8 | 7.2 | 7.2 | 50 |
| | MC119 | 99-0346 | LM170100W68 | W | 435 | 17.0 | 10.0 | 6.8 | 9.2 | 50 |
| 10mm | 10K, 10EZ(H) | 99-0215 | LM215128H75 | H | 565 | 21.5 | 12.8 | 7.5 | 12.7 | 50 |
| | 10PA | 99-0277 | LM220128H67 | H | 565 | 22.0 | 12.8 | 6.7 | 13.8 | 50 |
| | MC-120 | 99-0196 | LM225134H75 | H | 580 | 22.5 | 13.4 | 7.5 | 13.0 | 50 |
| | 10PD | 99-0341 | LM240128H67 | H | 580 | 24.0 | 12.8 | 6.7 | 16.2 | 50 |
| LC | APQ-25 | 99-0309 | LM335500H71 | W | 460 | 33.5 | 50.0 | 7.1 | 22.9 | 26 |
| | LPFS-31 | 99-0310 | LM335400H71 | W | 460 | 33.5 | 40.0 | 7.1 | 21.6 | 30 |
| Ceramic | CFM2, CFMS* | 99-0198 | LM205059H97 | C | 445 | 20.5 | 5.9 | 9.7 | 9.7(7.1)* | 50 |
| Material: Polycarbonate & Poly Vinyl Chloride | | | | Tolerance | ±1 | ±0.2 | ±0.2 | ±0.2 | (±0.15) | |

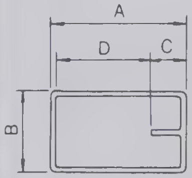
*EIA type name conforms to standards of the Electronic Industries Association. For other types not specified, please inquire.

**SHAPE OF CROSS SECTION**

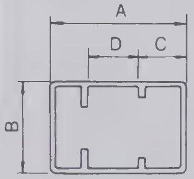
**H Type**



**W Type**



**C Type**



Notes: When storing or handling the products, please pay special attention to the following:

1. Products should be stored in environment free from dust and gaseous atmosphere containing chlorine, sulfur, etc.
2. High temperatures above 60ºC and high humidity conditions should be avoided.
3. In order to prevent deformation of the cartridge, care should be taken to prevent application of heavy loads.
4. The cartridge, including the stopper, and packing materials are re-usable and recycling is possible.

## APPLICATION NOTES

The following listings are provided to help you find the appropriate Coils and filters that compliment certain IC's. Additional listing are developed over time so if you do not find matching devices to IC's you are using, please contact your nearest TOKO AMERICA sales office. Some of the devices listed in this section (*) are not listed on proceeding pages as "Standard Parts", but are available through TOKO America, your local representative or distributor.

### *Motorola IC's*

| Component Type | TOKO Type | TOKO Part Number | Comments | Page Number |
|---|---|---|---|---|
| **MC1330A Low Level Video Detector** | | | | |
| T1 | 10KW | W10K-0039 | Double Transformer | * |
| L1 | MC120 | E526HNSA-100059 | | * |
| **MC1350 Monolithic IF Amplifier** | | | | |
| T1 | 10KW | W10K-0039 | Double Transformer | * |
| L1 | MC120 | E526HNSA-100059 | | * |
| **MC1374 TV Modulator Circuit** | | | | |
| L1 | MC120 | E526HNA-100297 | | 63 |
| L2 | 10K | BTKANS-9439HM | | 38 |
| L3 | MC122 | E528DNAS-100082 | | 64 |
| L4 | MC122 | E528DNAS-100082 | | 64 |
| **MC1377 Color Television RBG to PAL/NTSC Encoder** | | | | |
| 400ns Delay Line | 5VFNP | H321LNP-1436PBAB | | 87 |
| Chroma Bandpass | 10NSF | 166NNF-10264AG | 10mm | * |
| Chroma Bandpass | 5VUS | H286BAIS-6276DAD | 5mm (NTSC) | 87 |
| Chroma Bandpass | 5VUS | H286BAIS-4963DAD | 5mm (PAL) | 87 |
| **MC1378 Color Television Composite Video Overly Synchronizer** | | | | |
| 400ns Delay Line | 5VFNP | H321LNP-1436PBAB | | 87 |
| Chroma Bandpass | 10NSF | 166NNF-10264AG | 10mm | * |
| Chroma Bandpass | 5VUS | H286BAIS-6276DAD | 5mm (NTSC) | |
| Chroma Bandpass | 5VUS | H286BAIS-4963DAD | 5mm (PAL) | 87 |
| 300nH Choke | 7KL | 291CC-T1166AVF | 14.3MHz (7mm) | 87 |
| 300nH Choke | 10K | TKXC-T1262AVF | 14.3MHz (10mm) | * |
| 300nH Choke | 7KL | 291CCS-T1185AVF | 17.78MHz (7mm) | * |
| 300nH Choke | 10K | BTKXCS-T1278AVF | 17.78MHz (10mm) | * |
| 300nH Choke | 7KL | 291CCS-T1186AVF | 28.86MHz (7mm) | * |
| 300nH Choke | 10K | BTKXCS-T1279AVF | 28.86MHz (10mm) | * |
| Resonator (NTSC) | CRHF | DCRHF4.03 | 4.03MHzResonator | * |
| **MC3356 Wideband FSK Receiver** | | | | |
| Quadrature Detector | 10K | TKXCS-33733BS | | * |
| Ceramic Filter | CFSK | SK107M1-AO-10 | | 120 |
| L1 | MC120 | E526HNSA-100059 | | * |
| **MC13055 Wideband IF** | | | | |
| Quadrature Coil | 10K | TKXCS-33733BS | | * |
| Ceramic Filter | CFSK | SK107M1-AO-10 | | 120 |
| **MC3357 Low Power Narrow Band FM IF** | | | | |
| Quadrature Detector | 7P | A7BRCS-T1117Z | | * |
| **MC3359/MC3361 Low Power Narrow Band FM IF** | | | | |
| Quadrature Detector | 7P | 7MC-8128Z | 7mm | * |
| Quadrature Detector | 10EZ | RMC-2A6597HM | 10mm | 35 |

*continued on next page*

## Motorola IC's (cont.)

### MC3362/MC3335/MC3363 Low Power Dual Coversion FM Receiver

| Component Type | TOKO Type | TOKO Part Number | Comments | Page Number |
|---|---|---|---|---|
| Quadrature Coil | 7P | 7MC-8128Z | 7mm Type | * |
| Quadrature Coil | 10EZ | RMC-2A6597HM | 10mm Type | 35 |
| Ceramic Filter | CFSK | SK107M1-AO-10 | 10.7 MHz | 99 |
| 0.41μH | MC120 | E526HNSA-100059 | | * |

### TDA3301/3303 TV Color Processor

| Component Type | TOKO Type | TOKO Part Number | Comments | Page Number |
|---|---|---|---|---|
| 10μH | 5VS | A285TCHS-7566 | | * |
| 47μH | 5VUS | H286BAIS-6276DAD | | 87 |
| 400ns Delay Line | 5VFNP | H321LNP-1436PBAB | | 75 |
| 10μH | 7PH | A119ANS-T1033 | | 27 |
| Variable Coil | 7PH | A119ANS-17153Y | | * |

### TDA3330 TC Color Processor

| Component Type | TOKO Type | TOKO Part Number | Comments | Page Number |
|---|---|---|---|---|
| 4.43MHz Trap | 5VS | A285TCHS-7566 | | * |
| 400ns Delay Line | 5VFNP | H321LNP-1436PBAB | | 87 |
| 10μH | 7PH | A119ANS-T1033 | | 27 |
| Variable Coil | 7PH | A119ANS-17153Y | | * |
| 3.58MHz Trap | 5VUS | H286BAIS-6276DAD | | 87 |

### MC13022 Advanced Medium Voltage AM Stereo Decoder

| Component Type | TOKO Type | TOKO Part Number | Comments | Page Number |
|---|---|---|---|---|
| | 7P | A7NRES-T1370Y | | * |
| | 7KMM | MF292BC-1349Z | | * |
| 10kHz Notch Filter | THB | THB122 | | * |

### MC13023 AM Receiver Front End and Tuber Stablizer

| Component Type | TOKO Type | TOKO Part Number | Comments | Page Number |
|---|---|---|---|---|
| **Manually Tuned Application** | | | | |
| | 7PH | A119ANS-18287RS | | * |
| | 7P | A7NRES-11148N | | * |
| | 7P | A7NRES-1370Y | | * |
| | 7KMM | MF292BC-1349Z | | * |
| 10KHz Notch Filter | THB | THB122 | | * |
| **Electronically Tuned Application** | | | | |
| | 7PA | 126ANS-7594HM | | * |
| | 7P | A7BRS-11080UH | | * |
| | 7P | A7BRS-11081RS | | * |
| | 7PH | A119ANS-18287RS | | * |
| | 7P | A7NRES-11148N | | * |
| | 7P | A7NRES-T1370Y | | * |
| | 7KMM | MF292BC-1349Z | | * |
| 10KHz Notch Filter | THB | THB122 | | * |
| **High Performance ETR Tuner** | | | | |
| | 7PA | 126ANS-7594HM | | * |
| | 7P | A7BRS-11078N | | * |
| | 7P | A7BRS-11079X | | * |
| | 7PH | A119ANS-18287RS | | * |
| | 7P | A7NRES-11148N | | * |

*continued on next page*

## Motorola IC's (cont.)

| Component Type | TOKO Type | TOKO Part Number | Comments | Page Number |
|---|---|---|---|---|
| **MC13024 Low Voltage AM Stereo Receiver** | | | | |
| | 7P | A7BRS-10952X | | * |
| | 7P | A7BRS-T1342AIX | | * |
| | 7P | A7NRES-T1341 | | * |
| | 7P | A7NRES-T1340AYN | | * |
| | 7KL | MF291ACS-3688VL | | * |
| | PVC | HU-22124-N000-0 | polyvaricon | * |
| **MC2833/MC2831A Low Power FM Transmitter System** | | | | |
| 0.22 μH Inductor | 7KMM | 292SNS-T1368Z | | 33 |
| 3.3μH Inductor | 7KMM | 292KNS-T1375Z | | 33 |
| **MC44301 High Performance Color TV IF** | | | | |
| | 10K | TKANAS-T1390ADP | | * |

## National Semiconductor IC's

| | | | | |
|---|---|---|---|---|
| **LM1863 AM Radio System For ETR** | | | | |
| T1 | 5M | 5MFC-A087YRT | | * |
| T2, T3 | 7P | 7RTS-T1295CI | | * |
| T4 | 7P | 7NRES-T1266EK | | * |
| T5 | 7P | 7NRES-T1099AAG | | * |
| T6 | 7P | P7TRS-T1534A0 | | * |
| Resonator | CRK | CRK450 | | * |
| Varactor | VCD | KV1235Z | | * |
| **LM1865/LM1965/LM2065 Advanced FM IF Systems** | | | | |
| T1 | 10K | BKAC-K2318HM | | * |
| CF1, CF2 | CFSK | SK107M1-AE-10 | | 99 |
| **LM1866 Low Voltage AM/FM Receiver** | | | | |
| T1 | 10K | BKAC-K2318HM | | * |
| T2 | 7PU | 159GC-A3785HM | | * |
| T4, T5 | 10EZ | RWO-6A5105BM | | 34 |
| CF1 | CFMA | CFMA-003 | | * |
| Polyvaricon | PVC | QT-22124 | | * |
| **LM1868 AM/FM Radio System** | | | | |
| C1 | PVC | FL22124 | | * |
| T1 | 10K | BKAC-K2318HM | | * |
| T2 | 7PU | 159GC-A3785HM | | * |
| L2 | 10EZ | RWO-6A5105BM | | 34 |
| CF1 | CFMA | CFMA-003 | | * |
| **LM1871 RC Encoder/Transmitter** | | | | |
| | MC117 | E523LN-7210019 | | * |
| | 10EZ | RMC-202313N0 | | 35 |
| | 10EZ | RMC-402503N0 | | 35 |
| | 10K | BKXN-K4636BJF | | * |
| | 10K | BKEN-K4028DZ | | * |
| | 10K | KEN-K4635BJE | | * |
| | 10EZ | RAN-10A6729EK | | 34 |

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## National Semiconductor IC's (cont.)

| Component Type | TOKO Type | TOKO Part Number | Comments | Page Number |
|---|---|---|---|---|
| **LM1872 Radio Control Receiver/Decoder** | | | | |
| | 10K | BKEN-K4028DZ | | * |
| | 10EZ | RMC-202313NO | | 35 |
| | 10EZ | RMC-402503NO | | 35 |
| | 10K | KXNA-K4434DZ | | * |
| | 10EZ | RMC-502182NO | | 35 |
| | 10EZ | RMC-502503NO | | 35 |
| | 10K | BKEN-K4857DZ | | * |
| **LM3089 FM Receiver IF System** | | | | |
| | 10K | BKAC-K2318HM | | * |
| **LM3189 FM IF System** | | | | |
| | 10K | BKACS-K586HM | | * |
| **LM3361 Low Voltage/Power Narrow Band FM IF System** | | | | |
| | 10EZ | RMC-2A6597HM | | 35 |
| **LM3820 AM Radio System** | | | | |
| L0, L2 | 10EZ | RW0-6A6255N | | 34 |
| T1 | 10EZ | RRC-3A6426N | | * |
| T2 | 10EZ | RRC-3A6427A | | * |
| T3 | 10EZ | RZC-1A6425A | | 35 |
| **LM1880 No Holds Vertical/Horizontal** | | | | |
| | CRK | CRK503 | | * |
| **LM2889 TV Video Modulator** | | | | |
| | 10K | KAC-K5674HM | | * |
| **LM1812 Ultrasonic Transceiver** | | | | |
| L6 | 12VXA | 719VXA-A018YSU | | * |
| L1 | 10PA | CAN-1A901HM | | * |
| L6 | 12VXA | 719VXA-A017A0 | | * |
| L1 | 10PA | CLN-2A900HM | | * |
| **LM1893/LM2893 Carrier Current Transceivers** | | | | |
| T1 | 12VXA | 719VXA-T1060YUK | 125 KHz | * |
| T2 | 12VXA | 719VXA-T1061YUK | 50 KHz | * |
| T3 | 10EZ | RZNS-T1147YUK | 300 KHz | * |
| **LM1894 Dynamic Noise Reduction System** | | | | |
| L8 | 10PA | CAN-1A185HM | | * |

## Signetics IC's

| Component Type | TOKO Type | TOKO Part Number | Comments | Page Number |
|---|---|---|---|---|
| **TDA8708/8709 Video A/D Converter** | | | | |
| 5MHz low pass filter | 5VFT | H315LNLS-2722TBD | | * |
| **NE/SA605-NE/SA615 Low Power Mixer FM IF** | | | | |
| | 10EZ | RMC-2A6597HM | | 35 |
| | MC120 | E526HNA-100297 | | 63 |
| | 7KMM | 292KNS-T1375Z | | 33 |
| **NE/5050 Power Line Modem** | | | | |
| | 12VXA | 719VXA-T1062N | | * |

## Plessey IC's

| | | | | |
|---|---|---|---|---|
| **SL6639 FSK Direct Conversion Receiver** | | | | |
| 1:1 Transformer | 5CE | 432AN-1210X | 0.11μH nominal | * |

## 4 Bit Microprocessor

| Manufacturer | Series | Representative Models | TOKO Type | Page |
|---|---|---|---|---|
| NEC | μCOM43<br>μCOM44<br>μCOM43N | μPD546C, μPD553C<br>μPD547C, μPD552C<br>μPD1511C | CRK-400 | 121 |
| HITATCHI | HMCS40<br>LCD II | HMC42, HMC43,<br>HMC44C, HMC46A<br>HD44790 | CRK-400 | 121 |
| MITSUBISHI | MELPS760<br>MELPS4<br>MELPS42 | M50760, M50761<br>M50763<br>M58840, M58858<br>M58496, M58497 | CRK-400 | 121 |
| TOSHIBA | TLCS43<br>TLCS47<br>TLCS46A | TMP4300C, TMP4320AP<br>TMP4700AC, TMP4746N<br>TCP4600AC, TCP4621P | CRK-400 | 121 |
| SHARP | SM | SM100, SM110, SM120 | CRK-400 | 121 |
| | | SM200 | CRL-262 | 121 |
| TI | TMS | TMS1000, TMS1070,<br>TMS1100, TMS1200 | CRK-400 | 121 |

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## Remote Control IC's

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|---|---|---|---|---|
| TOSHIBA | Transmitter | TC9132P | CRK-455<br>or<br>CRK-480 | 121 |
| | Receiver | TC9134P | | |
| | Transmitter | TC9148P | | |
| | Receiver | TC9149P | | |
| | Receiver | TC9150P | | |
| NEC | Transmitter | μPD1913C | | |
| | Receiver | μPD1937C | | |
| | Transmitter | μPD1986C | | |
| | Transmitter | μPD1943C | | |
| | Receiver | μPD1987C | | |
| MITSUBISHI | Transmitter | M50110XP | | |
| | Transmitter | M50115XP | | |
| | Receiver | M50111XP | | |
| | Receiver | M50116XP | | |
| | Transmitter | M50125P | | |
| | Receiver | M50126P | | |

## Telephone IC's

| | | | | |
|---|---|---|---|---|
| SHARP | Pulse Dialer | LR40981A, LR40982 | CRK-480 | 121 |
| | | LR4173 | | |
| TOSHIBA | | TC31003AP, | | |
| | | TC31006AP, | | |
| | Pulse Dialer | TC31009P, TC310012P | CRK-480 | 102 |
| | Tone Dialer | TD31007P | | |
| MOSTEK | Pulse Dialer | MK50981, MK50982 | | |
| | | MK4173 | CRK-480 | 121 |
| MOTOROLA | Tone Dialer | MC3401OP, MC34011P | CRK-500 | 121 |
| G.I. | Tone Dialer | AY-39410, AY-39401 | CRK-560 | * |
| SHARP | DTMF | LR4803 | CRHF3.58 | 122 |
| | DTMF | MS6052 | CRHF3.58 | 103 |
| | DTMF | MT8870B | CRHF3.58 | 122 |

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